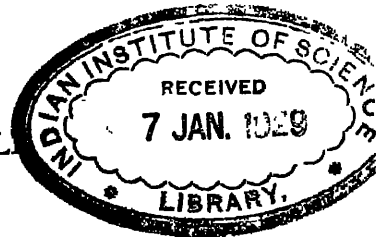




COMMITTEE ON INDUSTRY AND TRADE

Survey of Textile Industries

COTTON
WOOL
ARTIFICIAL SILK



Being Part III of a Survey of Industries

LONDON:
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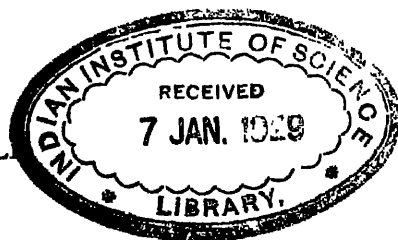
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COMMITTEE ON INDUSTRY AND TRADE.

INSTRUMENT OF APPOINTMENT.

Whereas it has been represented to me, the Right Honourable James Ramsay MacDonald, Prime Minister, First Lord of the Treasury and Secretary of State for Foreign Affairs, by the President of the Board of Trade, that it is desirable to inquire into the conditions and prospects of British industry and commerce, with special reference to the export Trade ;

Now I, therefore, do hereby appoint the following persons * to form a Committee to inquire into and report upon the aforesaid matters, and to make recommendations in regard thereto ;

Sir ARTHUR BALFOUR, K.B.E. (*Chairman*).

Mr. JOHN BAKER.

* Sir WILLIAM BEVERIDGE, K.C.B.

Mr. HENRY BOOTHMAN.

Mr. J. T. BROWNLIE, C.B.E.

Mr. W. T. CHARTER.

Mr. C. T. CRAMP.

* Mr. HUGH DALTON, D.Sc.

Sir HARRY GOSCHEN, K.B.E.

Mrs. M. A. HAMILTON.

Mr. F. A. HARGREAVES.

Sir NORMAN HILL, Bart.

Sir JOHN S. HINDLEY.

Mr. DAVID LANDALE.

Sir W. CLARE LEES, O.B.E.

* Mr. P. J. PYBUS, C.B.E.

Mr. ARTHUR SHAW.

Sir ALLAN SMITH, K.B.E.

Sir HUBERT LLEWELLYN SMITH, G.C.B.

I further appoint Mr. W. Carter to be Secretary and Mr. A. R. Fraser and Mr. W. L. Buxton to be Assistant Secretaries to the said Committee.

(Signed) J. RAMSAY MACDONALD.

28th July, 1924.

* The members whose names are marked with an asterisk subsequently found it necessary to resign, and the following additional members were appointed :—

Sir WILLIAM ASHLEY, Ph.D. (appointed 2nd December, 1924, died 23rd July, 1927).

Sir W. PETER RYLANDS (appointed 30th April, 1925).

MEMORANDUM ACCOMPANYING TERMS OF REFERENCE.

The scope of the terms of reference is regarded as being on the general lines set out in the three following paragraphs, which are intended as explanatory of the subjects on which investigation is specially desired and not as an exhaustive definition of the inquiry:—

"The first question to which the attention of the Committee should be directed is the present position of British overseas trade and the prospect of British participation in the markets of the world being such as to ensure sufficient and continuous employment and a satisfactory standard of living in this country. The examination of tendencies and developments in the markets of the world and also in the chief competing countries will be involved, together with an inquiry into the growth of competition with British goods in these markets, the likelihood of its continuance, and its probable consequences.

"The second question is the ability of British industry to meet competition under the conditions thus determined and to adapt itself to changes in the nature of overseas demand. This involves an inquiry into British productive capacity and organisation, including the supply and efficiency of capital, labour and management, the present and future adequacy of raw materials and possible improvements in their utilisation, and the part played by the United Kingdom in new developments of industry, particularly those which are the outcome of scientific research. Matters to which attention might be directed are the present extent of large-scale production, its possibilities and limitations; the efficiency of plant and equipment; power supply and transport as factors in cost of production; marketing organisation at home and abroad; and the current methods of industrial and commercial finance. It will be necessary, in addition, to take account of the effect of State regulative action upon costs and output.

"The third question is that of the relations between those engaged in production. This will involve inquiry into methods of industrial remuneration, the main causes of unrest and disputes, and the methods of avoidance or settlement of disputes, as, for example, co-partnership, co-operation, Wages Boards and voluntary arbitration, State regulation of wages, and compulsory arbitration and compulsory enforcement and extension of agreements."

New Public Offices,
Great George Street, S.W.1.
January, 1928.

The Rt. Hon. Stanley Baldwin, M.P.,

Sir,

We, the Committee appointed by your predecessor on the 28th July, 1924, "to inquire into and report upon the conditions and prospects of British industry and commerce" addressed a letter to you in June, 1925, transmitting a collection of Surveys of Overseas Markets, and stating that we proposed to submit from time to time, in advance of our final report, further collections of material bearing on different aspects of our reference. In pursuance of this proposal, we submitted to you in February, 1926, our Survey of Industrial Relations, and in December of the same year our third volume entitled "Factors in Industrial and Commercial Efficiency."

In forwarding the last mentioned volume we explained that it constituted the first part of a Survey of Industries, the material for which was too extensive for inclusion in a single volume. This Survey we have now completed, and we beg to submit it herewith, to be laid before Parliament if so desired. The three parts into which for the sake of convenience it has been divided, form, with the preceding volume, a connected whole. In order to facilitate the study of this final collection of memoranda, we have prefixed to it a brief introductory summary and review. This introduction will be found in the volume entitled "Further Factors in Industrial and Commercial Efficiency."

We venture to hope that the six volumes which we have now completed will not only be found of practical utility in relation to the problems of the present time but will also prove of permanent value as a record for future reference.

The preparation of our Final Report has already been begun and we now propose to press on with its completion.

Since we last addressed you, we have suffered a grievous loss through the death of our valued colleague Sir William Ashley, and we wish to take this opportunity of paying our tribute to his memory.

A. BALFOUR (*Chairman*).

JOHN BAKER.

HENRY BOOTHMAN.

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H. LLEWELLYN SMITH.

W. CARTER, *Secretary*.

A. R. FRASER } *Assistant*

W. L. BUXTON } *Secretaries.*

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NOTE.

Comparisons with Pre-war Conditions. The following note appeared in previous volumes published by the Committee on Industry and Trade, and is reproduced here as being applicable :—

"The comparisons of post-war with pre-war conditions which appear so frequently throughout the volumes are not to be taken as necessarily implying that pre-war conditions are regarded as a standard to which it is probable or desirable that post-war conditions should approximate. Pre-war conditions are, however, generally recognised as a convenient datum line for comparisons, and it is from this point of view that they have been used in these volumes."

.. .. .

CHAPTER I

THE COTTON INDUSTRY.

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THE COTTON INDUSTRY.**I. INTRODUCTORY AND HISTORICAL.**

From a comparatively obscure place among British industries the Cotton industry has risen during the past 150 years to the foremost rank. In the number of its employees and in the value of its output, it is comparable among manufacturing industries only with such large aggregations as the iron and steel and the engineering industries, and it has far surpassed the much older wool textile industry. In the contribution which it makes to the value of the export trade it has no serious rival. Cotton yarns and manufactures represent about one-quarter of the total value of all British exports. Further, British exports of cotton yarns and manufactures occupy an outstanding position in the international trade of the world in these commodities.

Origins.

It is worth while at the outset to consider very briefly how a country such as Great Britain, which is far removed from the sources of supply of raw material and also from many of the largest consuming markets, attained pre-eminence in the working up of cotton. The factors which originally enabled a powerful cotton industry to be established and developed here are, of course, not necessarily the same as those which subsequently enabled the industry to maintain and strengthen its position, and later developments will be considered in detail in a separate section of this chapter.

The advantages which Great Britain possessed for the establishment of a large cotton industry were not the advantages of an early start. According to Baines,* "England was among the latest of all countries to receive the cotton manufacture." The industry, he says, "was known in each of the other quarters of the globe earlier than in Europe; and in Spain, Italy, the Low Countries, Bavaria, Saxony, Prussia and Turkey before it was introduced into England."

Among the factors which contributed to make Great Britain a particularly suitable place for the establishment of the cotton industry were certain natural advantages of situation, of climate, and of resources. As regards situation, this country was a very convenient distributing centre both to Northern and Southern Europe; and, being accessible by sea, it was easy to bring in raw cotton. Indeed, when the West Indies, and subsequently the United States, became large growers of cotton, Great Britain was practically

* History of the Cotton Manufacture, Ch. VII.

en route between these producers of raw materials and the European consuming markets, which (so far as related to exports) were at that time all important. As there was no very great difference of weight between the raw material and the manufactured article made from it, there was no compelling motive to manufacture the cotton in the producing countries, which were, moreover, not ripe for industrial development on the new lines. Regarding climate, a humid atmosphere such as exists in Lancashire and the adjacent counties is particularly suitable for spinning and weaving, since humidity enables the fibres of the cotton readily to cling together, and to retain the twist which it is necessary to put into the yarn. With regard to natural resources, the existence of iron and coal were of obvious importance when manufacture by machinery replaced handicraft methods, and when steam came to be used as a motive power. The availability of water power to drive the mills was a factor of importance before the steam engine was generally adopted.

Intimately bound up with these natural conditions were the influences which enabled modern methods of organisation and machine processes of manufacture to develop more freely and fully in this country than elsewhere. Great Britain's insular position largely cut her off from the disturbances which retarded economic and social progress on the Continent of Europe, while, on the other hand, the development of maritime transport facilitated the importation of raw cotton and the exportation of cotton goods. Overseas trade stimulated the accumulation of capital, an abundance of which was essential for the establishment of the new manufacturing industry. Further, Great Britain possessed a great advantage over India and other cotton manufacturing countries of the East, in a less rigid social system which enabled new methods of manufacture to be evolved and adopted, with the consequence that this country could sell cotton goods in India at prices with which the native handicraft industry found it largely impossible to compete.

The precise date at which cotton was first worked in this country is not known, but there is evidence that the industry was of some importance in Lancashire in the first quarter of the 17th century.* It is questionable, however, whether pure cotton goods were made in Lancashire in the 17th century, and the main product was a hybrid fustian consisting of a linen warp and a cotton weft.† The industry made slow though definite progress during the 17th century and the greater part of the 18th century. From about 1770, however, a process of very rapid expansion began under the influence of improved methods made possible by a number of epoch-making inventions affecting both spinning and weaving, as well as some of the subsidiary processes in the industry.

* Daniels—The Early History of the Cotton Industry, p. 8.

† Ibid p. 19.

INTRODUCTORY.

Concentration in Lancashire.

It may be noted that from the first the cotton industry was carried on to a large extent, perhaps mainly, in Lancashire. For this, it has been said,* there was no particular reason except, perhaps, that the woollen industry was already there, that foreigners were kindly received (thus facilitating the development of an export trade), and that Manchester was not a Corporation, so that there was no question of economic favours being granted to freemen. The great natural advantages of Lancashire for carrying on the cotton industry early asserted themselves and led to increased concentration in that area. In no other part of the country was the climate more suitable for spinning, and in few as suitable; water power for driving the early spinning mills and for bleaching, etc., was fairly plentiful; coal and iron, too, existed in abundance, while the port of Liverpool offered ample harbour accommodation.

The advantages of concentration were later still further emphasised by the development of market organisation and of various industries and services which specially benefited undertakings in the Lancashire district. The Census of 1921 showed that of 620,564 persons engaged in the cotton industry in Great Britain, no less than 529,974, or 85·4 per cent. of the whole, were enumerated in Lancashire or the adjacent parts of Cheshire and Derbyshire. The West Riding of Yorkshire, where the industry, no doubt, possesses advantages from close contact with the wool textile industry, and Scotland (mainly Lanarkshire and Renfrewshire) account for the greater part of the balance.

Industrial Processes.

It is not here necessary to recount the story of the great technical inventions which revolutionised the methods of manufacture and organisation of the industry, nor to trace the steps by which the original ideas were developed and the early machinery improved by a host of later inventors. It is, however, convenient at this point to indicate very briefly the nature of the chief processes in the industry as carried on at the present day.

The seed cotton, after being picked from the plant, is passed in the country in which it is grown through a "ginning" machine which separates the seed from the cotton† (known at this stage as "lint"); and the lint, which forms the raw material of the cotton industry, is compressed into bales for convenience of transport. On arrival at the mill where it is to be used, the cotton is taken

* Chapman—The Lancashire Cotton Industry, p. 154.

† After ginning, there remains adhering to the seed a short fuzzy lint which is subsequently removed by delinting machines. This lint is used principally for wadding, for stuffing mattresses, etc.; and is known as "linters."

from the bale and subjected to a series of operations preliminary to spinning. As the cotton is compressed in a solid mass and contains much dirt it is necessary to open it up and shake, blow, or beat out the dirt, so as to convert it into a form ready for the next stage, namely carding. These processes are performed by machines known as bale-breakers, openers, scutchers and lap machines, from which the cotton emerges, with the principal impurities removed, in the form of a continuous flat band or "lap." The carding process aims at removing any remaining impurities, extracting short or broken fibres, combing the fibres roughly parallel, and drawing out the lap into a thick loose rope or sliver. After leaving the carding engine, the sliver passes through a drawing frame in which a number of slivers are doubled together and drawn out to the same weight per yard as any individual sliver so as to reduce irregularities. It then passes through other frames—slubbing, intermediate and roving frames—the object of which is to draw it finer and to impart a slight twist, so as to enable it to withstand strain during the final processes preceding spinning. In the preparation of the better and finer qualities of yarn these processes are prolonged, requiring highly specialised machinery and the exercise of great care and judgment.

Spinning machinery in use at the present time is mainly of two kinds, viz. (1) the self-acting mule, evolved from the mule invented by Crompton about 1779, and (2) the ring frame, evolved from Arkwright's water frame invented about 1769. A softer and better quality of yarn can be obtained from a given grade of cotton with the mule than with the ring frame, because the former exerts less tension than the latter, and requires less twist to be imparted to the yarn. The ring frame has the advantage of being a simpler machine than the mule and also of spinning continuously instead of intermittently. It produces a greater weight of yarn per hour and requires less skill on the part of the operatives. The yarn from a ring frame is more tightly spun, and, whilst it is stronger than mule yarn, it cannot be used for cloths where "feel" of the cloth is an important factor. Ring yarn is used in nearly all cases for warp. In mule spinning exact adjustment of the machine, constant vigilance, experience, skill and rapid action are necessary if the best results are to be obtained. Ring spindles are commonly operated by female labour, while mules are operated by men. A disadvantage of the ring frame is that the yarn must be wound as it is spun on to small bobbins or long thick paper tubes. Where the yarn is wound on to bobbins it is usually found desirable to re-wind the yarn if it is to be sent away in order to avoid the trouble and expense of "empties."

Yarn may be converted into thread (e.g. for sewing) by a process known as "doubling," in which many strands of yarn are twisted and doubled in order to attain the required strength or the desired

INTRODUCTION.

"count".* Yarn may also be dyed prior to being woven, or the yarn is woven without being dyed.

Before "twist" yarn† can be woven into cloth, however, it must be put into a condition to enable it to withstand the strains to which it will be subjected in the loom, and must be prepared for use in the loom according to the kind of cloth required to be produced.

In the "winding" process a suitable length of twist yarn for use as warp is transferred to warpers' bobbins. "Warping" and "beaming" are the process of transferring the yarn from a number of bobbins on to warpers' "beams," which are rollers with flanges at either end. Several beams are then placed in a "creel," and the warp threads are taken through a tank containing boiling size. The yarn is thus impregnated and enabled to withstand the tension and friction to which it is subjected in the loom. The threads are dried by passing over steam heated revolving cylinders, and are wound on to the weaver's beam, a similar flanged roller, which is later fitted in at the back of the loom. Before this is done, however, the thread ends are drawn through "healds" and "reeds" which, in the process of weaving, raise and lower certain threads so that the loom shuttle containing the weft may pass under or over the warp threads in order to weave the cloth to the required pattern. It should be added that there are several variations from the methods here described.

The various types of looms on which the weaving process is performed need not here be described, but reference should perhaps be made to the use of the so-called automatic loom. The essential difference between this and the common Lancashire power loom (as evolved from Cartwright's power loom originally invented in 1787) is that in the automatic loom, when the weft breaks or is exhausted, the shuttle is automatically recharged with weft and threaded without being removed. All that the weaver has to do in regard to the weft is to keep the magazine charged, and the loom will then run unattended for some two hours, unless it should be stopped by the breaking of a warp thread. The automatic loom, which is used extensively in the United States and some other countries, has been adopted to a comparatively small extent in this country, although it was invented by an Englishman. It is much more expensive than an ordinary loom, occupies more space, and does not weave at the same speed. It is regarded as more suitable for the production of coarse goods in large quantities where labour is scarce, than for fine goods such as are largely produced in relatively small quantities of any one kind in this country.

* The "Count" of the yarn is the number of hanks, of about 840 yards, which go to the pound. Obviously the higher the Count the finer the yarn.

† "Twist" yarn is yarn intended for use as warp. Yarn intended to be used as weft is called "weft" yarn.

According to the nature of the final product which it is intended to produce, the grey cloth from the loom may be either bleached, or printed, or dyed in conjunction in each case with any of a variety of further "finishing" processes. Large quantities of grey cloth are, however, exported without undergoing such treatment.

Thus by a long succession of operations, the form or condition of the material is gradually altered or arranged conveniently for the next stage of treatment, and the raw cotton is at last converted into the finished cloth. The complications and difficulties which arise at each stage cannot here be indicated, but it should be remarked that in all the processes skill, knowledge, and experience make a vast difference in the quality of the product; and this consideration affects the validity of statistical comparisons between the industry in one part of the world and that in another.

Rapid Growth of the Industry in Great Britain.

From the time when the great mechanical inventions began to be widely applied to cotton manufacture up to the outbreak of the Great War, the history of the industry is one of more or less rapid, though not wholly uninterrupted, growth. The interruptions to growth were, however, nearly all short lived, being attributable to a poor cotton crop or a temporary depression of the demand for cotton goods. On one occasion only did the industry suffer a serious disaster, namely during the American Civil War, when a large part of the essential raw material was cut off for several years.

So far as the operatives are concerned, periods of depression in the cotton industry have as a rule meant under-employment rather than unemployment. Employment was spread by working short time or by reducing the amount of machinery per operative, and the proportion of operatives actually discharged during a period of depression was small. The American Civil War period was exceptional in this respect.

The broad continuity of the development of the industry may be judged from the figures relating to retained imports of raw cotton, statistics regarding which are given in Table 1 on p. 142. While in 1785 the quantity retained was 17,993,000 lb. and in 1800 56,011,000 lb., the figure rose to an annual average of 118,268,000 lb. in 1815-19, 514,942,000 lb. in 1840-44, 1,254,000,000 lb. in 1870-74, 1,535,000,000 lb. in 1890-94, and 2,008,000,000 lb. in 1910-13.

Apart from the period of the American Civil War (1860-64), and from trifling set backs in 1875-79 and 1885-89, retained imports of cotton, when averaged over periods of five years, showed a continuous increase up to the outbreak of the Great War. The falling off in retained imports which marks the years 1920-27 is unprecedented in duration, and can be compared in severity only with the depression of the American Civil War period, though the circumstances of that time were widely different from those now existing.

Another indication of the development of the industry is the growth of its machine equipment. Statistics regarding this are given in Table 2 on p. 142. Between 1885 and 1914 the number of spindles increased by 43·7 per cent. from 41,298,000 to 59,317,000, and of the actual increase nearly three quarters took place between 1905 and 1914. Spinning capacity no doubt increased faster than the spindleage, especially during the earlier part of the period, owing to improvements in the machinery.* It is significant that since the war there has been no decline in the number of spindles corresponding with the reduction in retained imports of raw cotton. The number of spindles in 1927 was greater than in 1914. A reduction from 60,079,000 to 59,511,000 occurred between 1920 and 1924 owing to mills going out of effective—though not perhaps out of actual—existence; but since 1924 the figures have tended markedly to increase, reaching 60,465,000 in 1927.

The number of looms was on the whole increasing rapidly before the war, and not least between 1905 and 1914, when the number rose from 652,166 to 805,452. Since the war the figures have been slightly below the maximum pre-war level, and have tended to decline rather than to increase.

Another aspect of the development of the industry is represented by the number of persons engaged in it at different times. Table 3 on p. 143 shows the estimated number of persons occupied in the cotton industry at each Census from 1851, and Table 4 shows the numbers employed in cotton factories as ascertained from returns obtained by the Home Office. Despite an enormous increase of production since 1851 the number of persons occupied in the industry has grown comparatively little. From 1851 to 1871 there was an actual decline from about 570,000 to about 503,000, but from that point the figure rose (with a setback in 1901) to 620,000 in 1911. The percentage of males fell rapidly from about 46·5 in 1851 to about 37 in 1881, since which time there has been no marked change in the proportion of the sexes.

The falling off in the numbers employed between 1851 and 1871 may be associated with the replacement of handicraft work (notably hand loom weaving) by power driven machine production, and with the concentration of machinery in large buildings instead of in numerous small places each containing a few looms, as well as with the great improvements which were being made in the efficiency

* It may be noted that the consumption of cotton per spindle rose from 35·8 lb. annually in 1885–89 to 37·2 lb. annually in 1895–99. Subsequently there was a decline, and in 1910–13 the consumption was only 34·6 lb. per spindle. Apart from any change which may have occurred in hours of labour, this is probably to be explained on the ground of the increasing fineness of the yarns spun.

of the machinery. Later, when factory production had become practically universal in the industry and when the machinery had been brought to a high level of efficiency, increased output could no longer be readily achieved without an increase of personnel.

The numbers of persons employed in cotton factories (as distinct from the number of persons occupied in the industry) show a general upward trend over almost the whole of the period (1839-1898) covered by Table 4, though part of the increase may be due to a widening of the scope of the Factory Acts. Whereas at the middle of the nineteenth century, the figures indicate that large numbers of persons in the industry were employed outside the factories regulated by the Factory Acts, this margin diminished rapidly and factory employment soon accounted for almost the whole of the workpeople in the industry.

Turning now to the export trade, it may be remarked that this has long been of the greatest importance, and in fact the export trade has for many years far exceeded the home trade. It has been estimated* that in 1913 the equivalent of 1,432 million lb. of yarn were exported, whether in the form of yarn or of finished goods, while the equivalent of 500 million lb. were retained for the home trade (including yarns used for the lace and hosiery industries, for mixing with other textiles or spun for stock). That is to say, about three-quarters of the output of the industry was exported apart from yarns which may have been converted into lace or hosiery and exported in that form.

The position of the British export trade in the products of the cotton industry will be discussed more fully later in this chapter. All that need be done here is to note the growth in exports over a long period as a further indication of the development of the industry up to the beginning of the war. The necessary particulars for this purpose will be found in Table 6, p. 146, which shows the general course of the export trade in the principal items (i.e. yarns, piece goods and finished thread), by quinquennial averages from 1820-24 to 1913, the figures for the post-war years being added for comparison.

The export of piece goods, which is the most important branch, expanded with only a single break in the continuity of the movements of the quinquennial averages (namely, during the American Civil War period 1860-64). From an annual average of 293 million yards in 1820-24, exports increased to 1,107 million yards annually in 1845-49, 3,446 million yards in 1870-74, 6,002 million yards in 1905-09, and 6,673 million yards in 1910-13. The cotton yarn trade attained its maximum volume in 1885-89, when it averaged 251,890,000 lb. It fell to an average of 161,790,000 lb. in 1900-04, recovering to 217,353,000 lb. in 1910-13. The export of finished thread reached a maximum of 31,321,000 lb. annually in 1900-04,

* Board of Trade Journal, 3rd May, 1923, p. 531.

and it fell to an average of 22,679,000 lb. in 1910-13. In all three categories—piece goods, yarn, and finished thread—the exports in the post-war period have been at a low level relatively to those of 1910-13, and the position in this respect is discussed in detail in later sections of this Chapter.

Tables 7 and 8 on pp. 148-9, taken from Messrs. Ellison and Company's "Annual Review of the Cotton Trade," show the distribution of exports of yarns and piece goods over the period 1820-1911.* Europe has throughout been the principal market for yarns, and over the greater part of the period 1820-1911 she took more than half the exports. From 1820 to 1880 the proportion of yarns sent to Europe fell rapidly, as markets in the Far East and, to some extent, in other countries developed; but subsequently exports to the Far East declined, and the proportion of yarns sent to Europe rose, roughly, in correspondence. In the piece goods trade Europe, at one time the pre-eminent market, has long been of relatively small account. The export trade to the United States and to America generally also receded in relative importance over the period covered by the table. On the other hand, exports to the Far East increased greatly in importance up to about 1880, after which their relative position remained, approximately, constant.

Development of the industry abroad.

Consideration of the British export trade raises the question of foreign competition. This question is discussed at length in Section V below, but in the present introductory Section it may be well to indicate briefly the place of the British industry in the world production of cotton goods, and also the place of the British export trade in the total international trade of the world in cotton products.

The advantage which Great Britain derived from being a pioneer in the application of machinery to the cotton industry could not, in the long run, remain unshared. Despite attempts (by restriction of the emigration of artisans and the export of machinery) to prevent the spread of the new method, it was smuggled abroad and copied.

to give instruction as to the working of the machines. Substantial cotton industries organised on the new lines were developed quite early in the 19th century in a number of continental countries, and in the United States. Later, the new methods were introduced into India and into many other countries.

The differential advantage which Great Britain obtained from the invention and early adoption of machinery is now largely lost, for other countries have long been able to buy British-made machines, and it is said that in the introduction of improvements Lancashire

* An analysis of the distribution of the export trade in yarns and piece goods in more recent years is included in Section IV, p. 54.

has twelve months' start over other countries and no more. Even to-day, however, the presence in close contact with the cotton industry of the leading and most highly developed cotton textile machinery industry must be counted in various ways as a substantial advantage for the Lancashire cotton industry over that of most other countries.

The expansion of the industry throughout the world may be, roughly, traced in statistics of cotton spindleage. (See Table 9 on page 150.) In the early 1880's the world's spindleage was between 75 and 80 million spindles, of which the British spindleage represented over half. By 1914 the world's spindleage, at 145 millions, had almost doubled; but the British spindleage had increased by less than half, and represented below 40 per cent. of the world's total. Since the war the world's spindleage has further advanced to about 165 million spindles in 1927, and the British proportion has fallen to little more than one-third of the total. Table 10 shows the number of spindles in 1911-14 and 1923-27 in each of a number of countries; and the development of the cotton industry and trade in many of those countries is discussed in Section V below, and in Appendix 2, p. 84.

It is not here necessary to describe in any detail the conditions which have promoted the growth of the cotton industry in its modern form in foreign countries. To a great extent these conditions have not been peculiar to the cotton industry, but have governed the spread of the industrial revolution generally from its original centre in Great Britain. Unlike the iron and steel industry and some other industries, whose location is controlled largely by proximity to raw materials, a cotton industry may often be economically established and carried on far from the sources of supply; and the Lancashire industry is a conspicuous example of this. Nevertheless, countries which are able to draw upon a local supply of cotton possess some advantage, and this may be reinforced by the advantage of proximity to markets, especially as the use of cotton goods is for climatic reasons important in and about the areas where the cotton grows (e.g. India, the United States, Africa). Protective tariffs have also had an important influence upon the spread of the industry.

The development of the cotton industry in many foreign countries was further encouraged by the fact that labour could be obtained at lower rates of wages than those current in Lancashire, while mills could be operated for longer hours and working conditions were not regulated to the same extent by factory legislation. While British labour may not now be markedly more efficient than that available in some countries—notably on the Continent—where the industry has long been established, elsewhere labour is often very inefficient. Textile machinery has, however, been evolved so nearly automatic in operation that cotton goods of a kind can be produced by workers who have attained only a low degree of skill.

This applies particularly to the spinning of coarse counts on ring frames, and to weaving of coarse low-grade cloth on automatic or other looms. In view of the practical importance of the distinction between mule spinning and ring spinning* it is of interest to note the difference which exists as between different countries in the proportion between mules and ring spindles. Table 11 on p. 152, illustrates the position in 1927. Great Britain has 67·5 per cent. of the mule spindleage of the world, but only 13·7 per cent. of the ring spindleage. Other European countries have 26·5 per cent. of the mule spindleage and 29·0 per cent. of the ring spindleage, while non-European countries have 6·0 per cent. of the mule spindleage and 57·3 per cent. of the ring spindleage. The large proportion of mule spindles in Great Britain is closely connected with the superior quality of a great part of the British production, both of yarns and of fabrics.

Competitive Advantages of Lancashire.

The development of cotton working industries in many foreign countries with low grade labour and automatic machinery has impelled Lancashire for many years past to concentrate increasingly on fine counts and high grade fabrics for the production of which she still possesses definite advantages over other countries.

It is in the spinning and weaving of fine yarns and cloths that the naturally humid climate of Lancashire is important,† and that the skill of the operatives—the outcome of generations of training—plays an essential part.

While Lancashire has lost the differential advantages resulting from the accidental combination of circumstances which made Great Britain the pioneer of the Industrial Revolution, her special facilities for making and marketing yarns and cloth remain very great and have in some respects probably increased rather than diminished. Apart from the influence of the enormous improvements in transport which specially benefit countries distant from raw materials and markets, the great scale which the Lancashire cotton industry has attained has made possible a degree of specialisation within the industry which would not otherwise have been attainable in this country, and which is unattainable in any country where the industry is small. The character and extent of this specialisation will be indicated in the next section below.‡ One advantage resulting from

* See above, p. 6.

† Humidity is very important for fine spinning and weaving, and her climate gives Lancashire a natural advantage. But owing to the great strides made in the production of humidifying machinery, similar atmospheric conditions can be produced artificially in other countries.

‡ See p. 15.

the development of the industry is that large stocks of raw cotton of all growths are maintained at Liverpool from which spinners can at any time meet their precise requirements. Moreover, the Lancashire industry derives great advantages from high development of other industries and services (e.g. transport, news, banking, insurance) which is in some measure consequent upon the growth of the cotton industry itself. These are substantial and valuable assets, although their importance cannot be precisely measured.

*International Trade in Cotton Yarns and Manufactures
before the War.*

Tables showing the value of the exports of cotton yarns and cotton manufactures from the United Kingdom, France, Germany and the United States in each year from 1880 to 1908 are contained in the volume of "Statistical Tables and Charts relating to British and Foreign Trade and Industry" (Cd. 4954). Exports of yarns from the three foreign countries mentioned were comparatively insignificant, and up to the close of the 19th century did not appreciably gain ground relatively to British exports. As regards the export of cotton manufactures the three foreign countries were more important and the trade of all three (but particularly Germany) increased relatively to that of the United Kingdom, so that while in 1880-84 British exports had averaged about 87 per cent. of the exports of cotton manufactures from the four countries, in 1900-04 this percentage was reduced to 72 per cent.

From 1902 Statistics are available regarding the export trade of a large number of countries; and Tables 16 and 17 on pp. 156-7 show the value of exports of (a) cotton yarns and thread from ten countries and (b) cotton manufactures from twelve countries during the years 1902-13.* Over the period covered by these figures, Great Britain appears substantially to have maintained her proportion of the aggregate trade in yarns and manufactured goods. British exports of cotton yarns and threads represented about half the aggregate value of the exports of yarns and thread from the ten countries from which figures are given; and British exports of cotton manufactures broadly 55 to 60 per cent. of the aggregate value of exports of manufactures from the twelve countries for which figures are given. Some countries (notably Austria-Hungary, Italy and Japan) were securing an increasing share of the trade, while the share of a third group of countries—including Germany and the United States—was diminishing.

* A statement of the volume and value of exports of yarns and piece goods in later years is given in Section V. p. 61 below.

II.—ORGANISATION.

Number and Size of Separate Sections.

Apart from the various interests (such as merchants, brokers and warehousemen) concerned with the importation and distribution of raw cotton, the Lancashire cotton industry comprises the following distinct sections :—

(1) The spinning section, with two main sub-divisions according as the undertakings are producing coarse or medium counts of yarn (mainly from American cotton) or fine counts (mainly from Egyptian cotton). Immediately before the war, about one quarter of the total number of spindles were employed in spinning Egyptian cotton. The proportion has been higher during post-war years, and rose to over one-third in 1924 though it has subsequently declined somewhat. A smaller sub-section of the spinning section is concerned with the production of sewing thread.

(2) The weaving section, otherwise known as the manufacturing section.

(3) The finishing section, sub-divided into bleachers, dyers and calico printers. While the finishers are concerned mainly with the cotton textile industry, and represent an important stage in the production of cotton goods, they are also concerned to some extent with other textile industries such as wool, linen and silk, and with the knit-goods and hosiery industries.

(4) The merchanting section, including yarn merchants or agents, cloth merchants in the home trade, and (most important of all) the shipping merchants.

In addition, mention should be made of the packers, who undertake the packing of goods for the export trade on a "commission" basis.*

From the particulars given below, it will be seen that each of the sections of the industry is organised separately and that while a high degree of concentration and combination exists among the finishers, the other sections consist of large numbers of separate concerns. While the Manchester Chamber of Commerce doubtless includes representatives of all, or nearly all, the sections of the industry, there is no standing organisation representing the whole of the industry such as exists in certain other great industries,

* The Committee did not receive evidence from representatives of the packers, and the packing section is therefore not discussed in detail. The Master Packers' Association (whose functions include the fixing of prices) claims to handle something approaching 75 per cent. of the cotton textiles exported from this country. The Third Census of Production showed that in 1924 the average number of persons employed by firms in the packing trade generally was 8,043, and as the firms were situated mainly in Manchester and Bradford, it may be presumed that the bulk of the trade consisted in packing cotton and wool textiles.

and it is only on rare occasions and as the result of special arrangements that consultations take place among all the separate sections.*

In the circumstances described it is obviously possible for diverse conditions to exist simultaneously in the several sections and for severe depression in one or more sections to co-exist with a much more favourable situation in others. For example, it will be seen later that the depression of the post-war years has been concentrated specially in the American section of the spinning trade and that certain other sub-divisions of the industry (e.g. the fine spinners and finishers) have throughout been much more favourably circumstanced. It is therefore important in discussing the position of the cotton industry and trade to bear in mind the nature of its organisation as described above.

From the point of view of the numbers of persons employed the spinning and weaving sections are much the largest. According to the preliminary results of the Third Census of Production, the average number of persons employed in those sections in 1924 was 517,232, of whom 15,411 were mainly engaged in management and in clerical and technical work. Of the 501,821 operatives, 238,438 were employed in spinning and 263,383 in weaving.† While about 64 per cent. of the total number of operatives were women, the proportion in the spinning section was smaller (59 per cent.) and in the weaving section larger (68 per cent.). The finishing sections also represent an important though smaller volume of employment, the average number employed in 1924, according to the Census of Production, being 107,812, of whom 84,947 were males. The number of management, clerical and technical staff included in the total was 10,183. These figures include persons employed in finishing all kinds of goods, i.e. not only cotton, but also wool, linen, silk, etc.

The Lancashire Cotton industry is bounded at one end by the Liverpool Cotton Exchange and at the other end by the Manchester market for manufactured goods. There is also at Manchester a market for yarns, as well as for raw cotton. Before considering the internal arrangement of the manipulative sections of the industry, it is convenient to indicate the functions of these markets.

The Liverpool Cotton Market.

Having regard to the range of cotton dealt in, as well as to the extent of business, Liverpool is the most important cotton market in the world. It is the channel through which not only Lancashire,

* As regards the Joint Committee of Cotton Trade Organisations, *see* p. 29.

† According to the Census of Population, 1921, persons engaged in carding, spinning, doubling and thread mills numbered 227,360, and persons engaged in weaving numbered 385,500.

but an important part of the cotton industry of continental Europe draws its supplies ; and it is far more than a mere channel through which the raw material of the industry is obtained, it is a highly organised speculative market, with all that that implies.

The present organisation and methods of business are the outcome of a gradual process of evolution. In the infancy of the cotton trade, it was customary for raw cotton to be consigned for sale to merchants in London or Liverpool, who sold through brokers to dealers in Manchester and elsewhere, who in turn retailed the cotton to spinners. By the end of the 18th century Liverpool had ousted London as the principal port to which cotton was consigned, but the system of selling through brokers and dealers lasted until after the opening of the Liverpool and Manchester Railway. The Manchester dealers were after that rapidly displaced in favour of the present system under which spinners buy their cotton direct through buying brokers in Liverpool. In more recent years, following the opening of the Manchester Ship Canal, substantial and increasing amounts of cotton have been shipped direct to Manchester, but the amount of business done in raw cotton is small compared with that done at Liverpool, and Liverpool alone counts as a world market for raw cotton.

The organisation of the Liverpool market grew enormously in complexity during the third quarter of the 19th century, following successive improvements in the means of communication, and especially the laying of the Atlantic cable in 1866. The fact that news could be transmitted faster than goods promoted dealings in cotton "to arrive" or "in transit" and paved the way for regular business in "futures." Broadly a "futures" contract is a contract for the delivery within a certain period, and at a price fixed when the contract is made, not of a specific lot of cotton but of a specified quantity of a standard quality of cotton. The evolution of a regular "futures" market was thus conditioned amongst other things by the possibility of classifying cotton according to agreed standards or grades. The maintenance of certified standards and the provision of machinery for grading cotton and for settling disputes as to grading became part of the regular work of the organising body of the cotton market*—the Liverpool Cotton Association, a body which was formed in 1882 by an amalgamation of previously existing associations of cotton brokers and of merchants, and which in 1927 had about 560 members representing between 250 and 300 firms. In order that there might arise a free speculative market in "futures" it was also essential that such dealings should

* The Liverpool standards were until 1923 the basis of all European transactions in cotton. In that year, however, so-called "universal standards" for American cotton were agreed upon between the European exchanges and the United States Department of Agriculture, and these were adopted in 1924 by the Liverpool Cotton Association. For other growths the Liverpool standards remain.

be uniformly distinguished from mere contracts for forward delivery (such as might be entered into by a spinner with his broker) by being related to a fairly plentiful grade of cotton, and that the conditions governing delivery, etc., should be clearly defined. "Futures" contracts in fact have long been made on standardised forms drawn up by the Liverpool Cotton Association in which the only details to be filled in are the quantity, the price and the time of delivery. Even as regards the quantity there is a limitation in that the unit of dealings is 100 bales in the case of American cotton "futures," and 50 bales in the case of Egyptian cotton "futures"; while the time of delivery is now the calendar month, i.e. delivery has to be made before the close of the calendar month specified in the contract. Dealings in American cotton "futures" are now related to the quality known as "Middling," and dealings in Egyptian cotton "futures" are related either to "Fully Good Fair Sakellaridis" or to "Fully Good Fair Upper"; but in each case delivery is permitted of other grades of cotton, within a certain range above or below, subject to adjustments of price. It should be added that in 1925 a "futures" contract was established for "Empire and Miscellaneous" growths of cotton in addition to those for American and Egyptian cotton.

The "futures" market has assumed enormous proportions, and has required the development of an elaborate clearing house machinery, for adjusting accounts between the successive buyers and sellers of "futures" contracts, and for cancelling out opposing claims. The principle is to make weekly payments in respect of price fluctuations, so that at the end, when the contract comes to be liquidated, the payment made by the final purchaser corresponds with the current market price. A remarkable feature of the system of "futures" contracts which has grown up is that only a very small proportion of these contracts is liquidated by actual delivery of cotton. A contract may be bought and sold many times over, so that intermediate sales can be cancelled out, subject only to a payment of differences; but even the final purchaser of the contract may prefer to commute his claim for a money payment. The spinner who needs cotton for consumption will usually elect to buy it from sample rather than accept delivery, on a "futures" contract, of cotton which may not be of the quality which he requires. Indeed, it would appear that the existence of an obligation of actual delivery at the maturity of the contract is not an essential part of the "futures" contract, and in so far as it necessitates the holding by the market of stocks additional to what would otherwise be necessary it may be burdensome in time of scarcity.* On the other hand, the right of actual delivery may be convenient to the merchant who owns

* The obligation of delivery against "futures" contracts was temporarily suspended in the modified form of contract introduced during the war.

cotton of a kind not immediately required by the spinner, and such cotton may most suitably be held by the market as a reserve against the obligation to deliver.

Having regard to the small proportion of "futures" contracts which culminate in actual delivery, the question may be asked whether this system of trading is of real value to the cotton trade and industry. It can hardly be doubted that it is of great value and that the trade could not satisfactorily be carried on without it. It is true that the system lends itself to abuse; for example, it may lead to gambling on the part of outside speculators who have no knowledge of conditions affecting the cotton trade, and it may facilitate manipulation of the market by professional operators, with consequent movements of price not warranted by the underlying circumstances of supply and demand. On the other hand, a well organised "futures" market enables the task of foreseeing future conditions of supply and demand, and of adjusting the price of cotton with the effect of diminishing extreme fluctuations, to be concentrated in the hands of an expert group whose business it is also to carry risks which would otherwise remain to be borne by cotton merchants and spinners. The professional operators on the Liverpool market legitimately aim at making a profit by taking advantage of differences in the price of cotton (*a*) as between different places, and (*b*) as between different times; and in order that they may do this successfully it is necessary for them to keep in close touch with other large cotton markets (as e.g. those at New York and New Orleans) and also with the continually fluctuating conditions affecting the production of raw cotton and the requirements of spinners. In the case of a commodity the supply of which is dependent upon the state of the crops and cannot be rapidly adjusted to meet changes in demand, it is obvious that the task of foreseeing and discounting the future is one of great importance which may reasonably require the service of a group of experts. The process by which merchants and spinners may be relieved of the risk of fluctuations in the price of cotton is known broadly as "hedging." It consists in principle of balancing each spot transaction by an equal and opposite "futures" transaction. Thus an importer in Liverpool, on being notified by telegram that his agent in America has bought cotton for shipment, "hedges" by selling "futures" to a corresponding amount in Liverpool. When the cotton arrives it is warehoused and sampled, and on the samples is disposed of to spinners. As the cotton is sold, the importer *pari passu* buys in "futures" to eliminate his hedge (i.e. to cancel out his previous sale of "futures"); and the sale of the last 100 bales of cotton synchronises with the buying back of the last 100 bales of "futures." If the price of cotton has risen during the period covered by the transactions he loses on his "futures" transactions, but balances this by a gain on his transactions in actual cotton. If, on the other hand, the price of

cotton has fallen he gains on his "futures" transactions, but loses correspondingly on his transactions in actual cotton. As an alternative to thus selling his cotton the importer may deliver it on maturity in fulfilment of the "futures" contract, assuming the cotton to be of a grade which can be so delivered. In either case the importer has effectively transferred to the market that part of the risk which is connected with fluctuations in the price of cotton, and his function is practically limited to arranging for the purchase of cotton, its transport across the Atlantic and its sale on this side. His profit is that part of the normal difference between the price of cotton in the exporting and the importing country, respectively, which remains after meeting transport and other charges.

It is similarly open to the spinner to "hedge" against the risk involved through acceptance of a contract for the supplying, some time ahead, of yarns at a fixed price, or through manufacturing yarns for stock. In the former case he "hedges" by buying "futures" at the same time as he enters into the contract for the supplying of yarn. As he requires cotton for spinning he buys it from samples and simultaneously sells a corresponding amount of "futures". When he wishes to make yarn for stock he sells "futures" simultaneously with his purchases of actual cotton, and as he sells his yarn he buys back his "hedge". In this case the effectiveness of his hedging transaction in enabling him to avoid risks is dependent upon the fact that the price of cotton and the price of yarn as a rule move in close accord. The avoidance of risk due to market movements is not absolute either in this case or when the "hedging" is intended to guard against risks connected with deferred purchase or sale of raw cotton. In the one case the price of yarn and the price of cotton may not move exactly in proportion, while in the other case there is still some risk due to divergencies in the price movements of different grades of cotton. Notwithstanding these qualifications "hedging" is a practical method of insurance to which great value is attached.

The Market for Manufactured Goods and the Functions of the Shipping Merchant.

At the other end of the Cotton Industry is the market in which manufactured goods are sold by the weaver to the Manchester Shipping merchants, for export, or to the home trade merchant for distribution in this country. The market in cotton manufactures is of a very different type from the market in raw cotton. It would not be true to say that there are no standard kinds of cloth, but there is nothing that corresponds to the grading, still less to the organised speculation, which characterises the Liverpool Cotton market. The keynotes are individuality of the product and specialisation of particular merchant firms to particular markets. The various merchant firms practically all belong to the Manchester Chamber

of Commerce and are organised in seven geographical sections, as follows, for the purpose of promoting and safeguarding group interests: Home and Overseas Dominions; Africa; India; China and Far East; Europe and United States; Central and South America; and Egypt, Greece and Levant. The combined interests of the sections are represented by the Shipping Merchants' Committee consisting of 21 members, three being nominated annually by each of the sections. The number of export shipping merchants who deal in cotton piece goods for overseas markets is probably about 1000, but many of these are believed to trade only on a small scale.

The functions of the shipping merchant may be summarized as follows:—

- (a) *Finance*.—He finances the goods from the time they leave the manufacturer (who usually receives payment within seven days) and during the bleaching, dyeing and printing processes, until after they have been sold in the country to which they are exported. In many cases credit extending to six months has to be given to the purchaser abroad, and this requires trained and experienced discrimination both as to when to grant credit and for what period.
- (b) *Knowledge of Goods*.—He has to know from what manufacturer he can obtain particular kinds or qualities of goods, and where and how to secure the particular finish that is required, since if two different types of grey cloth were subjected to the same process, or if the same cloth were subjected to slightly different processes, the final result might be widely different. Employing, as he does, the services of the manufacturer to produce his cloth and of the finisher to carry out the further processes, the shipping merchant is thus responsible not only for the machinery of export, but also for the final stages of production and the control of the ultimate character of the goods. It is claimed that the system of distribution by which the oversea customer is able to buy from the merchant the precise cloth he requires has been largely instrumental in creating British prestige in the world markets for cotton goods.
- (c) *Knowledge of Markets*.—The merchant must have intimate knowledge of the requirements of the markets in which he trades, and of all the conditions affecting those markets. He must also pay careful attention to packing and to shipping arrangements.

It is clear that the services performed by the shipping merchants are as pivotal at the manufacturing end of the industry as are those which centre in the Liverpool Cotton Market at the raw material end. The machinery has grown up to meet the special requirements

of the cotton industry, and it is claimed by the shipping merchants that the services which they perform could not be performed so well by any other agency. It should be added that some large manufacturers have their own marketing arrangements both for overseas and for home trade. The number of merchants selling finished cloth in the home market for domestic consumption may be about 150, in addition to numerous merchants and agents (perhaps three or four hundred) who handle cloth in its intermediary stages, irrespective of whether it is destined for home or foreign consumption.

The Yarn Market.

Intermediate between the raw cotton market and the market for manufactured goods is the yarn market at Manchester. This is less highly developed than the raw cotton market, for yarns are much more variable than raw cotton, and consequently much less capable of being exactly graded. The geographical proximity of spinners and weavers, moreover, facilitates direct trading ; and it is said that about half the yarn produced proceeds direct to users. In so far as spinning and weaving are carried on by one firm, a commercial transaction is, of course, not required, but such combination of processes is not generally the rule. Where yarn is not sold by the spinner to the manufacturer it passes through the hands of a "yarn agent" who may either find a buyer in return for a commission, or take all the risks in connexion with the transaction. Export trade in yarns may pass through the hands of shippers, or (as particularly in the case of fine yarns) may be carried on through the spinners' own agencies in foreign countries.

Spinning and weaving.

The organisation of the Liverpool cotton market and the Manchester yarn market enables the spinner to concentrate his attention primarily on functions of an industrial order, as distinct from those of a commercial description. The position of the weaver is somewhat different in this respect since he is a stage further removed from the Liverpool cotton market with its facilities for "hedging" ; while, owing to the wider range and greater individuality of products, and despite some standardisation of plain cloths for Eastern consumption, the market for manufactured goods is, on the whole, less "perfect" (in the sense that there is at any time a recognised market price for a particular product) than is the yarn market. It has been suggested* therefore, that capacity of a commercial order counts for a good deal more in weaving than in spinning ; and that the fact that the two branches appeal to different types of men is probably to a considerable extent responsible for the separation of spinning and weaving in distinct businesses which, on the whole, prevails. No doubt other forces have also been at work ; for example, the development of a large export trade in yarns meant that spinning was, to a considerable extent, carried on as a final stage of production, so that the spinning plant did not require to be balanced by weaving

* Chapman—The "Lancashire Cotton Industry," p. 162.

plant in this country. The demand for yarn from the important sewing thread industry and from the hosiery industry tended in the same direction. Further, a weaving mill is liable to use a wider range of yarns than are produced in a single spinning mill, especially in view of the development of extreme specialisation in spinning. It is significant that the separation has developed mainly since the introduction of power-loom weaving, for the early power looms were mostly run in connexion with spinning mills. The extent of separation must not, however, be exaggerated, for combined spinning and weaving businesses are not uncommon.

Localisation.

Besides the separation of spinning and weaving in distinct businesses, there is a geographical separation in more or less distinct localities, and there is a further marked sub-localisation of different branches of spinning and weaving. Spinning is concentrated mainly in South Lancashire and the adjacent part of Cheshire, while weaving is carried on mainly in North and North-East Lancashire, the principal centres being Blackburn, Burnley and Preston. The spinning of fine counts (60's and upwards to 300's) mainly from Egyptian cotton is centred in the Bolton and Manchester districts, while the spinning of coarse and medium counts is localised in Oldham and Rochdale, and doubling is mostly carried on in the Stockport district. There is intense specialisation in spinning, and mills may be organised with a view to the production of a single or very narrow range of counts. In such mills other counts can be produced only at increased cost. In weaving there is also much specialisation. Thus, Blackburn and East Lancashire towns largely produce fabrics for the Indian market; Preston produces shirtings, sheetings, longcloths, fancy cloths, etc.; Burnley produces printing cloths; Nelson and Colne manufacture sateens and brocades; Colne and Radcliffe largely weave dyed yarns; Oldham makes fustians; Bolton makes quilts; and sheets and towels are made at Heywood.

Types and sizes of businesses in spinning and weaving.

Both in spinning and in weaving there exist firms of different types and of a great variety of sizes. The main facts were analysed by Professor (now Sir Sydney) Chapman and Mr. T. S. Ashton in a paper on "The Sizes of Businesses mainly in the Textile Industries", read before the Royal Statistical Society* on 17th March, 1914; and Table 5 on pages 144-5 has been compiled from their data. The figures show for 1884 and for 1911 the numbers of firms of different sizes, as judged by the number of spindles or looms; and also how many of the firms were (a) joint stock companies in origin, (b) companies which originally started as private undertakings, and (c) private firms or partnerships.

* See Journal of the Royal Statistical Society for April, 1914.

Spinning.—The figures show that in 1884 there were 493 private firms out of a total of 639 undertakings and only 120 undertakings which were joint stock companies in origin. In 1911, out of a total of 657 undertakings only 104 were private firms and 408 were joint stock in origin. The figures also show that whereas in 1884 the undertakings owning 30,000 spindles or less accounted for over half the total, and very few undertakings owned over 80,000 spindles, less than one-third of the total in 1911 owned 30,000 spindles or less, and over one-third of the total owned 80,000 or more. In the period of 27 years to which the Table relates, therefore, the company form of organisation became the predominant type, and there was at the same time a great increase in the scale of the business unit. It is clear from the Table that the two movements were connected, for the great majority of the private firms remaining in 1911 were relatively small (about three-quarters of them owned 30,000 spindles or less), whereas less than one-fifth of the companies which were joint stock in origin fell below this limit of size. The development of the large joint stock spinning mill is probably related to the high degree of specialisation as regards the range of yarns produced, to which reference has already been made. When production was intricate and variable the small firm under private management might prove the most efficient. But when it became a question of producing by stereotyped methods more or less standardised kinds of yarn, the large joint stock enterprise with its superior facilities for obtaining capital was likely to prove the more effective type. Some of the small firms remaining in 1911 were ascertained to be engaged on special classes of work such as reeling, winding and warping, or on doubling or waste spinning.

Since 1911, while the total number of spinning undertakings appears to have remained about the same, the company form has become still more predominant among them both by reason of the continuance of the existing trend and also owing to the flotation of a number of private firms as companies during the post-war boom. Thus according to Worrall's Cotton Spinners' and Manufacturers' Directory for 1924 the number of undertakings engaged in spinning only was 620,* of which only between 50 and 60 were private firms.

There has been a certain amount of amalgamation and combination in the spinning section of the cotton industry. This tendency was marked in the fine spinning branch before the war, the Fine Cotton Spinners' and Doublers' Association Limited having been formed in 1898 for the purpose of amalgamating the businesses of 31 companies and firms. Since that time control has been acquired over a number of other businesses, and the Association now controls over three million spindles. The Association, which is an ordinary commercial undertaking, is organised

* In addition the Directory records the existence of 232 undertakings engaged in both spinning and manufacturing.

as a holding company, and the individual mills continue under the management of the subsidiary companies. It should be added that the Fine Cotton Spinners' and Doublers' Association is one of the most powerful and successful combinations in the textile industries. Information as to the amount of capital engaged and as to the financial results is given on p. 38. In 1918 or later several amalgamations took place in other branches of the spinning industry, the most prominent being the Amalgamated Cotton Mills Trust Limited, which was formed in 1918 and by 1920 had obtained control of companies owning nearly $1\frac{1}{2}$ million spindles; and Crosses & Winkworth Consolidated Mills, Limited, which was formed in 1920 and by 1922 had acquired control of companies owning about 2 million spindles.* Owing to the depression in the spinning industry, added in some cases to the excessive capitalization of the companies consequent upon the high prices at which mills were bought, the financial results of these amalgamations since about 1920 have been extremely poor.

Weaving†.—In manufacturing (weaving), the private firm or partnership in 1911 still represented nearly half the aggregate number of businesses (410 out of 855), while the business which was joint stock in origin represented little more than one-fifth of the total. While the company form had become very much commoner in the weaving branch of the industry between 1884 and 1911, and has extended in some measure since then, it is still far from having reached the dominant position which it has attained in the spinning branch. Part of the explanation lies in the smaller extent to which specialisation has been carried in weaving than in spinning. The joint stock form of undertaking is associated to a considerable extent with the larger concerns (thus while only 52 per cent. of the total num...

...were companies, the percentage of companies among undertakings owning over 500 looms was about 62) and it has been suggested‡ that, for the complex task of management where the nature of the output has to be constantly varied to correspond with changes in demand, the private employer or group of partners may have advantages as compared with the large joint-stock company, however suitable the latter may be to a more stereotyped kind of production such as the manufacture of staple fabrics for the Eastern market, where taste changes slowly. Another reason for the prevalence of the small firm is the possibility of renting part of a weaving shed with the necessary power. This makes it possible for a man to start in a small way with only a small number of looms,

* The spinning companies included in these amalgamations are counted separately in the total number of spinning concerns mentioned above.

† See Table 5.B. p. 145.

‡ Chapman and Ashton: "The Sizes of Businesses mainly in the Textile Industries," *Journal of the Royal Statistical Society*, April, 1914.

gradually extending his business as he accumulates capital. It is significant that this system is relatively common in North-East Lancashire, a district where the weaving branch was expanding considerably before the war. While causes such as these no doubt account for the persistence of the relatively small weaving undertaking, it should be pointed out that (as shown by Table 5), the increase between 1884 and 1911 in the total number of weaving undertakings from 557 to 855 was accounted for mainly by an increase in the number of larger concerns, i.e. those possessing over 500 looms.

There appears to have been some increase in the number of weaving concerns since 1911, together with an extension of the company form of undertaking, for the number of manufacturers shown in Worrall's Directory for 1924 (exclusive of 232 undertakings engaged in both spinning and weaving) was somewhat over 900, of which under one third were private firms, though a good many of the others were no doubt private companies.

There appears to be little, if any, tendency towards combination or amalgamation of weaving concerns.

Opportunities for Advancement.

The extent of the opportunities which exist for able and energetic operatives to rise to the ranks of employers constitutes an important and characteristic feature of the Lancashire cotton industry, and it has an obvious bearing upon the efficiency and enterprise with which the industry is conducted. It is closely bound up with the facilities which exist for obtaining control over the necessary capital. A weaver starting in a small way rents room and power, and he may obtain looms and other machinery on credit, repayment being made perhaps over a period.* He may also obtain yarn and accessories on credit, or manufacture on commission. Later, when his business expands, it may be converted into a private limited company.

In the spinning branch there is not the same possibility as in weaving of starting in a small way, and the first stage of individual advancement is as a rule within a business. When a man has risen to the position of manager, he can, with very little capital, share in the creation of another business. In this connexion, an important factor has been the readiness with which the operatives and others in Lancashire have been prepared to subscribe share or loan capital for spinning mills. It is, moreover, not uncommon for mills to receive financial support from Liverpool brokers, the latter making

* See a paper on "The Recruiting of the Employing Classes from the Ranks of the Wage Earners in the Cotton Industry," by Professor (now Sir Sydney) Chapman and Mr. F. J. Marquis, read before the Royal Statistical Society on 16th January, 1912.

it a condition of the loan that they shall have a monopoly of the company's business on the Cotton Market.* Further, in spinning, as in weaving, there is a possibility of obtaining machinery on deferred payment.

Another route by which men may rise to the employing class is through the commercial side. Thus agency work may be undertaken for which the ownership of considerable capital is not essential.

Finishing Trades.

The principal sections of the finishing trades are those engaged in (1) bleaching, (2) dyeing, and (3) printing of piece goods. The term "finishing" is also used (as in the phrases "bleaching and finishing" and "dyeing and finishing") to denote the various processes which are applied to bleached (or dyed) cloth to give it the particular character desired. Moreover, grey cloth which is neither bleached, dyed, nor printed may go through a simple "finishing" process which still leaves it grey. A further section of the finishing trades includes the cotton yarn bleachers, dyers and sizers. The finishing trades are what is known as "commission" trades, or alternatively are said to work "on commission." These phrases refer to the fact that the cloth (or yarn) treated by the finishers does not become their property but remains the property of the merchant concerned, to whose detailed orders it is bleached, dyed, or printed, as the case may be, and to whose warehouse it is subsequently returned. From the technical point of view the "finishing processes" are related more closely to the chemical than to the textile industries. From the commercial point of view, on the other hand, as being connecting links in a chain of processes, the two groups are closely interdependent.

Combination in the finishing trades had made great strides during 15 or 20 years preceding the war. The Bradford Dyers' Association Limited dates from 1898, the Calico Printers' Association Limited from 1899 and the Bleachers' Association Limited from 1900, and each of these companies came to represent a large proportion of the industry in which it was engaged. In addition to these large consolidations of businesses, but comprising them as principal members, there were set up three strong voluntary associations† for fixing charges and otherwise representing the interests of the trades as a

* It was stated in evidence that the existence of "tied" mills under obligations to Liverpool Brokers is retarding importation of cotton through Manchester, notwithstanding that a saving (amounting in the case of an Oldham mill to about 5s. per ton) could be realised by importing through Manchester.

† These are trade associations in the ordinary sense of the word, while the other "associations" mentioned above, i.e. the Bradford Dyers' Association, the Calico Printers' Association and the Bleachers' Association are commercial undertakings trading for profit.

whole, viz. the Piece Dyers' Association (formed in 1908 on the basis of an earlier association dating back to 1896), the Federation of Calico Printers (formed in 1916) and the Bleaching Trade Advisory Board (formed in 1912 on the basis of earlier price associations extending back for over a century). For all practical purposes each of these organisations may be regarded as covering the whole or the greater part of the trade with which it is concerned. Thus the Bleaching Trade Advisory Board includes nearly all the bleachers; the members of the Federation of Calico Printers are responsible for the production of about 90 per cent. of the total output of calico prints; and the Piece Dyers' Association represents in its cotton section a majority, both in number of firms and volume of output, of the piece-dyeing trade.

Among the motives underlying the formation of these combinations, extreme internal competition is said to have been important, especially in the dyeing and calico printing branches. There may have been special opportunities for combination, as in the bleaching trade where the possession of many valuable water rights in the Lancashire area is understood to constitute an important element of strength; and there were doubtless also special economies to be derived from association, especially in a business consolidation, since the finishing trades are highly technical and can profit greatly from the exchange of information regarding processes, and from expenditure upon research.

Trade Associations and Trade Unions, etc.

The cotton industry is highly organised from the point of view of its representative institutions for promoting the interests of the various sections of the industry, and for collective bargaining. Reference has already been made to the Liverpool Cotton Association at the raw material end of the industry, to the Shipping Merchants' Committee of the Manchester Chamber of Commerce at the manufactured goods end, and to the organisations of bleachers, dyers, and printers in the finishing trade. Regarding the last-mentioned, it may be added that the Allied Association of Bleachers, Dyers, Printers and Finishers provides a common meeting ground (in regard particularly to labour questions) for the several organisations of employers engaged in the various descriptions of finishing processes. The employers in the spinning section are mainly included in local associations combined in the Federation of Master Cotton Spinners' Associations, which has an aggregate membership of 650 firms, employing normally about 160,000 workpeople and operating some 45,000,000 spindles and 76,000 looms. The manufacturers (weavers) are federated in the Cotton Spinners' and Manufacturers' Association, which has an aggregate membership of about 700 firms employing over 180,000 workpeople and operating 513,000 looms and 5,000,000 spindles.

The Cotton Yarn Association, formed in 1926 with a view to dealing with the depression in the spinning section, is referred to on p. 35.

While the Manchester Chamber of Commerce is not formally a representative organisation of the cotton industry, it includes in its membership persons associated with practically all the sections of the industry and therefore carries much weight as a body through which the views of the industry, particularly on commercial questions, can be expressed. It maintains a Testing House for the use of the industry and established in 1927 a Cotton Trade Statistical Bureau, to serve as a centre of information and intelligence regarding the industry as a whole.

Reference should here be made also to the Joint Committee of Cotton Trade Organisations, a body formed as a result of a meeting convened by the Manchester Chamber of Commerce in April, 1925. The Committee includes 5 representatives nominated by the Federation of Master Cotton Spinners, 5 nominated by the Cotton Spinners' and Manufacturers' Association, 5 nominated by various organisations representative of the Bleaching, Dyeing, Calico Printing, and other finishing interests, and 5 nominated by the Shipping Merchants' Committee of the Manchester Chamber of Commerce, with the President of the Chamber for the time being as Chairman and the Secretary of the Chamber as Honorary Secretary of the Committee. The object for which the Committee was appointed was to examine the possibilities of united action to remedy the state of trade. In December, 1926, the Committee appointed a sub-Committee to make a report on the internal situation of the trade and to suggest lines of corporate study and effort which might best serve to foster improved business.*

There are a number of trade unions covering different operations connected with spinning and weaving (the Card and Blowing Room Operatives' Amalgamation and the Operative Cotton Spinners' Amalgamation in the Spinning Section; the Amalgamated Weavers' Association, the Power Loom Overlookers' Amalgamation, the Warehousemen's Amalgamation, the Warp Dressers' Amalgamation, and the Tape Sizers' Amalgamation in the manufacturing section); and these are affiliated in the United Textile Factory Workers' Association. This does not include the unions in the finishing trades.

The nature of the joint arrangements for the settlement of industrial disputes, etc., is described in the "Survey of Industrial Relations" (pp. 272-4).

Research.†

The British Cotton Industry Research Association was formed in 1919, as a grant-receiving association under the Government

* A summary of a report by the Sub-Committee was published in the Press in February, 1928.

† See also the chapter on State Assistance to Research in Industry in "Factors in Industrial and Commercial Efficiency."

Scheme for encouraging industrial research. It has received substantial grants also from the Trustees of the Cotton Trade War Memorial Fund. The Council of the Association is representative of all branches of the industry including the trade unions, and the Association is supported by a large membership in the cotton industry. The Director is assisted by a research staff of between 80 and 90, of whom nearly half are University Graduates. The headquarters are at the Shirley Institute, Manchester, which is equipped with machinery, laboratories, etc., for the purposes of research. The investigations of the Association relate to the character of the raw material and to all stages of manufacture including the finishing processes.

III. ECONOMIC CONDITION OF THE INDUSTRY.

Productive Capacity.

As has been shown above, the Lancashire cotton industry has substantially the same equipment of spindles and looms as it had immediately before the war. There are rather more spindles and rather fewer looms. No marked change seems to have taken place in the efficiency of the machinery, which was raised to a high degree of perfection many years ago. Against slight improvements which may have been made in the more recently introduced models may, perhaps, be set the fact that mills have in many cases been unable to replace their equipment on account of the high cost and the economic depression in the industry.

It is not to be inferred that the productive capacity of the industry is the same as it was before the war, principally because the hours of labour were reduced in July, 1919, from 55½ to 48 per week. Both in spinning and in weaving an upper limit to the hourly attainable output is set by the speed of the machinery, which in turn is limited by liability to breakage of the yarn or warp when these are subjected to undue strain. Skill and assiduity on the part of the operatives certainly count for much in securing that the output approaches the maximum standard of quantity and quality, but it is questioned whether there has been an improvement in these respects since the war. Application on the part of the operatives was encouraged before the war, as it is now, by the payment of piece rates of wages, and the output then may not have been far short of the practicable maximum. It is stated that, in spinning, the production per hour is slightly lower than it was before the war, possibly owing to loss of minutes at daily starting and stopping, and because operative spinners (it is alleged) are less ready to help one another in small emergencies. As regards weaving, it is said that the proportion of inadequately skilled operatives is markedly greater than it was before the war. On the assumption that the productive capacity of a given number of spindles and looms is diminished in proportion to the reduction

in the working day, it may be estimated that in 1927 the productive capacity of the spinning branch was about 11 per cent. less than it was in 1914, though only 8 per cent. less than the average of 1911-14, and that the productive capacity of the weaving branch in 1927 was 17½ per cent. less than in 1914, though only 14 per cent. less than the average of 1911-14.

The productive capacity is, of course, increased in so far as a second shift can be worked. Under the Employment of Women, Young Persons and Children Act, 1920, the Secretary of State, upon joint application from the employer and the majority of work-people concerned, may make orders authorising the employment of women and young persons aged 16 and upwards between 6 a.m. and 10 p.m. on any weekday, except Saturday, and between 6 a.m. and 2 p.m. on Saturday, in shifts averaging for each shift not more than eight hours per day. But even if demand were sufficient to warrant the widespread introduction of the two shift system, the practicability of doing so would be limited by the available supplies of labour.

The comparative productive capacity of the bleaching, dyeing, printing and finishing industries is difficult to gauge. There has been no considerable extension of plant, but improvements have taken place in organisation and technical efficiency. As in cotton spinning and weaving, hours of work have been reduced to 48 per week, and the employers' associations generally affirm that under similar conditions of remuneration there has been no increase of hourly output to set off against the reduction of the working week. It was stated, however, that the Bradford Dyers' Association, Limited, shortly before the war entered into arrangements for the gradual introduction of piece-work, that these arrangements have now been fully carried out, and that a considerable increase of efficiency has resulted.

Output of yarns and piece goods.

The actual output of yarns and piece goods in 1924, as ascertained by the Census of Production, compares as follows with the corresponding figures for 1912 and 1907:—

				<i>Yarn.</i> <i>Million lb.</i>	<i>Piece goods.</i> <i>Million linear</i> <i>yards.</i>
1907	..	..	..	1,800	7,088
1912	..	..	..	1,976	8,044
1924	..	..	..	1,379	5,426

While between 1907 and 1912 there was a substantial increase of production, between 1912 and 1924 there was a heavy fall, amounting to 30·3 per cent. in the weight of yarn produced, and 32·6 per cent. in the yardage of piece goods. The Preliminary Report of the Census

of Production points out that these decreases were accompanied by a decrease in the number of persons employed in the spinning mills and weaving sheds of about one-sixth, but adds that the decrease in the normal hours worked and the considerable and varying extent to which in 1924 short time was worked in different sections of the cotton industry render any attempt to compare the quantity output per worker difficult and involved. It is true that, on the average, finer yarns are being spun than before the war, and it may be the case that the cloth manufactured is on the average somewhat broader as well as somewhat finer in quality, but these considerations cannot greatly mitigate the extent of the falling-off in output, which is very much greater than any decline in productive capacity attributable to the shortening of normal working hours.

A full understanding of the causes of the depression which has lasted so many years must depend upon an examination both of the circumstances affecting supply (including both the supply of raw cotton and the supply of yarns and manufactures) and also of those affecting demand, in connexion with which the position in the principal overseas markets will require special attention. The question of the raw cotton supply is dealt with in Appendix 1, p. 77 ; and the overseas trade in yarn and piece goods is discussed in detail in Sections IV and V of this chapter. It is proposed here merely to touch upon certain features of the economic condition of the industry during the past few years.

Changes in the number of persons in the industry.

While the Census of Population returns for 1911 and 1921 indicated a decline of about 4 per cent. in the numbers "engaged" in the cotton industry (including the spinning and weaving but not the finishing sections), the Census of Production returns for 1912 and 1924 showed a decline in the average numbers "employed" of nearly 17 per cent., viz. : from 621,516 to 517,232. Figures are also available (*see* p. 307) as to the number of persons in the industry who were insured under the Unemployment Insurance Acts at July of each year from 1923 to 1927. These indicate that the numbers in the industry changed but little during that period. The figure for 1923 was 567,440, and each subsequent year showed a slight increase until 1926 (574,980), after which there was a drop to 569,950. In considering these figures, it should be remembered that short-time in the spinning section and reduction in the number of machines per worker in the weaving section (rather than the discharge of a corresponding number of workpeople) are the customary means of meeting depression in the cotton industry. For the same reason the returns of unemployment in the industry may not reflect the full extent of depression. Nevertheless the numbers recorded as unemployed have been very considerable (*see* p. 307). In June, 1923, the number was 122,000. Thereafter it fell substantially and

in December, 1925, was under 39,000. In the following June (as a result of the general strike and coal stoppage) it rose to 144,000, but subsequently fell, the number in December 1927 being 57,000.

In the finishing sections, the comparison between 1911 and 1921 (Census of Population) showed an increase from 111,000 to 117,000 in the numbers engaged,* and that between 1912 and 1924 (Census of Production) showed a slight decline, viz.: from 109,500 to 107,800, in the numbers employed. Between 1923 and 1927 the numbers of insured persons increased on the whole, and attained the figure of 111,700 in July, 1927. During the same period, unemployment has (except in 1926) varied but little, averaging about 13,000.

Variations in prices and margins.

Another point of view from which the course of the industry may be considered is the point of view of prices. Appendix 5, p. 137, contains information as to prices of raw cotton, yarn and cloth in each of the years 1924 to 1927, compared with prices in 1913. The figures show that, except in the first quarter of 1924, the increase over 1913 in the price of American yarn was consistently greater than the increase in the price of American raw cotton. A similar statement holds as regards Egyptian cotton, except during the period from the middle of 1924 to the third quarter of 1925, when the price of Egyptian cotton was very high. The price of cloth rose proportionately less than the price of yarn up to the middle of 1925, but later when yarn prices were reduced, cloth prices did not fall to the same extent.

On the basis of certain assumptions as to the amount of waste produced in spinning and as to the amount recoverable for saleable waste, an attempt is made in the Appendix to calculate the actual margin out of which the spinner has to meet his expenses and to obtain any profit. These calculations suggest that in 1913, the margin (in the sense indicated) was in the case of 32's cop twist produced from American cotton, about 3*d.* per lb. of yarn. In 1924, the figure was about 7½*d.*, in 1925 7·15*d.*, in 1926 5·55*d.* and in 1927 5·09*d.* In the case of Egyptian yarn the margin would appear to have increased from 6·55*d.* in 1913 to 11·20*d.* in 1924, 9·63*d.* in 1925, 11·68*d.* in 1926 and 10·09*d.* in 1927. The percentage increase upon 1913 was apparently greater (70 per cent. in 1927) in the case of the American than of the Egyptian spinning margin (54 per cent. in 1927).

Depression in the American spinning section.

Depression has affected both the spinning and the weaving branches of the industry, but it has been felt with particular severity in the section engaged in spinning coarse and medium yarns, mainly

* These totals include persons engaged in the Making-up and Export Packing Trade, the number of whom recorded in 1921 was 5,042.

from American cotton. The section engaged in spinning fine yarns (mainly from Egyptian cotton) was hard hit in 1921, but showed a speedy recovery, and has since been much better employed than the so-called American section. In fact, there was for a time a marked tendency to turn from the spinning of American cotton to the spinning of Egyptian cotton, and the statistics of the International Federation of Master Cotton Spinners' and Manufacturers' Associations showed that in 1924 there were some 20,000,000 spindles on Egyptian cotton (out of a total of about 57,000,000 spindles) compared with 14,000,000 (out of a total of about 56,000,000 spindles) ten years before. Since 1924, however, some decline has taken place in the number of spindles on Egyptian cotton, and for the half-year ended 31st July, 1927, the figure was as low as 18,000,000.

Part-time working (which is the traditional method in the spinning industry for meeting depression of trade) has been the rule in the American section since 1920, and on repeated occasions the Federation of Master Cotton Spinners' Associations has attempted to systematise this part-time working. The recommendations of the Federation, even when supported in a ballot by mills controlling a very large proportion of spindles concerned, were not always loyally observed, and at best the system of organised part-time was open to objections. A uniform curtailment of hours worked in the American section made no allowance for the fact that conditions of supply and demand for different types of yarns within the section might show great diversity. Moreover, the more efficient mills which might have plenty of orders were required to work short time with the rest, although concentration of production in mills working full time makes for lower working costs than dispersion among a larger number of mills working part time. The system of part-time working no doubt enabled the available employment to be spread among the operatives so that fewer were wholly out of work, and it enabled mills to keep their staffs together. It might, therefore, be the best method of meeting a purely temporary depression, but in the case of a prolonged depression the disadvantages attaching to it were clearly more serious.

For some years after the depression began, the price of raw cotton remained at a high level. The table on p. 79 shows the price of cotton at various periods as a percentage of the average prices of the years 1910-13, and it will be seen that the average price of Middling American for the period 1920-24 was over twice (213·8 per cent.) the pre-war basis. The high price of cotton was widely regarded as a prime cause of the depression among the spinning mills, and great hopes were entertained that if cotton became cheaper, trade would improve. The table above referred to shows that the index number representing the price of Middling American fell to 177·5 in 1925, 128·3 in 1926 and 131·4 in 1927,

but the hoped for revival of trade has not materialised. It is true that at the end of 1925, signs of an early improvement were not wanting, but the anticipated revival was not experienced in 1926, the main causes being (according to Mr. F. W. Tattersall's Cotton Trade Review), (a) the steady fall in values, especially during the last half of the year, which discouraged buyers, and (b) the coal dispute, which both restricted production and increased costs. In the American spinning section, organised short time was in force during practically the whole year, and average production was about 60 per cent. At the beginning of 1927 hopes were again entertained of a revival in trade in the American spinning section, and production in fact increased from about 65 per cent. of full capacity at the beginning of the year to about 85 per cent. in March. Subsequently, however, it relapsed to between 60 and 65 per cent. during the last six months.

The efforts of the Federation of Master Cotton Spinners' Associations to systematise short-time working were abandoned at the end of 1926, but meanwhile various alternative methods of dealing with the situation were being explored, including a project for the formation of an association or cartel to grade yarns, fix minimum prices and regulate output. The scheme as elaborated in 1926 provided for the formation of a joint stock company to be called the American Cotton Yarn Association Limited, the capital of which would be subscribed by spinners in proportion to their spindles, part of the capital remaining uncalled. An important feature was a penalty clause under which members who violated the rulings of the Board would be liable to pay up the uncalled part of their shares and to be expelled from the Association. It should be added that the proposal related only to the branch of the spinning section engaged in spinning American cotton for sale. The necessary support was obtained from mills containing about three-quarters of the spindles spinning for sale in the American section, and in March 1927 it was decided at a general meeting of members to proceed with the organisation of the Association. Towards the end of April, the Association issued instructions to members as to the curtailment of production. This varied according to the class of yarn spun, reaching (in the first instance) a maximum of 25 per cent. in the case of the coarser yarns, while in the case of finer yarns above a certain quality no curtailment was required. In May, lists of minimum prices to be observed by members were issued, and later a system of transferable quotas was instituted under which a mill which did not wish to produce the full amount which it was permitted to produce could arrange through the Association for the sale to other members of the right to produce the difference.

In the course of the summer it became clear that the success of the Association was seriously jeopardised by a falling off in the demand for yarn in conjunction with the considerable number of

outside mills which were not bound by the instructions of the Association as to curtailment of production and prices. By undercutting the minimum prices, outsiders were able to obtain a disproportionate share of the available trade and to place members of the Association in a worse position than they might otherwise have occupied. Attempts were made by the Association to reach a compromise with those outside the Association, but these proved fruitless, and eventually it was decided to return to a state of unfettered competition by releasing members—for the time being at any rate—from all obligations with regard to curtailment of output or observance of minimum prices.

Overcapitalisation of Spinning Mills.

In connection with the economic condition of the spinning section of the industry, it is necessary to refer to the effect of the recapitalisation or financial reconstruction of numerous mills which took place during the post war boom of 1919-20. At that time large profits were being made in the industry,* the general level of prices was far above either the pre-war or the present level, and on the basis of replacement costs the mills were worth several times their original capital cost. This state of affairs prompted many companies to increase their capital by distributing bonus shares, while company promoters seized the opportunity to buy up mills and float them upon the public as new companies with a very much increased capitalisation. The great majority of the mills involved in these transactions belonged to the "American" spinning section.

The subsequent slump in the cotton industry left these recapitalised and reconstructed companies in a much worse position from the dividend paying point of view than was the case with the companies which had retained their original capitalisation. Unfortunate as this was from the point of view of shareholders in the reconstructed companies, it might not by itself have produced serious repercussions upon the spinning industry as a whole had the reconstruction taken the form solely of increasing the share capital. In many cases, however, the loan capital was also increased, and the necessity for paying interest on loans tended to eat away any margin left for the payment of dividends, and not infrequently produced or magnified a deficit in the profit and loss account. This in turn meant that additional capital had to be obtained if the mill was to continue. The traditional method of obtaining accommodation was to borrow from the banks on the security of uncalled share capital, but the financial position became in many cases so serious that it was necessary actually to call up the unpaid part of the shares. Shareholders who were required to meet calls could in many cases do so only by withdrawing loan capital from the same or other

* In 1920 the dividends paid by 250 companies averaged nearly 20 % on their paid-up share capital.

mills, and this tended to aggravate the trouble of the American spinning section generally. A further effect was the creation of "weak sellers" of yarns, consisting of mills which, in order to meet bank charges or other immediate requirements, were forced to sell their production and stocks of yarn at less than production costs. This also tended to weaken the commercial position of the American spinning section as a whole.

Some detailed information on various aspects of the subject will be found in Appendix 3, p. 123. An indication of the relative position from the point of view of capitalisation and profits of (a) the spinning companies which retained their original capitalisation, and (b) those which were re-capitalised or reconstructed, is given in the following analysis of company results, which appeared in 1926, published in Tattersall's Cotton Trade Review:—

	<i>Original Spinning Companies.</i>	<i>Recapitalised or reconstructed Companies.</i>
Number of company reports examined	65	227
Number of spindles	6,241,248	23,535,184
Paid up capital	£3,398,827	£41,654,232
Loan capital	£3,150,348	£17,664,971
Paid up capital per 1,000 spindles	£544	£1,770
Loan capital per 1,000 spindles	£505	£751
Average dividend paid ..	9.51%	2.52%

This analysis covers fully half the cotton spindles in Great Britain, and probably two-thirds of those spinning yarns from American cotton.

While the financial circumstances of the original companies have been much better than those of the other companies, the recapitalised companies have on the whole fared better than the reconstructed companies. This may be seen from the following figures (quoted from the "Manchester Guardian") showing the percentage of dividends to total paid up share capital over a series of years for a group of about 310 companies, including 65 original, 35 recapitalised and 210 reconstructed companies:—

<i>Reports appearing in</i>	<i>Original Companies Per cent.</i>	<i>Recapitalised Companies Per cent.</i>	<i>Reconstructed Companies Per cent.</i>	<i>Total Companies Per cent.</i>
1921 ..	13.1	8.4	2.4	4.3
1922 ..	8.9	6.6	1.3	2.7
1923 ..	4.4	6.1	0.7	1.6
1924 ..	4.7	5.8	0.8	1.7
1925 ..	13.25	8.6	2.25	4.0
1926 ..	9.6	7.2	1.3	2.7
1927 ..	7.3	6.1	0.6	1.8

The dividends paid by the original companies averaged 8·7 per cent. over the period 1921–27, those paid by the recapitalised companies averaged 6·9 per cent., and those of the reconstructed companies 1·3 per cent. For all the companies together the average was 2·6.

Position in the Fine Spinning Section.

As already stated the fine spinning branch of the industry speedily recovered from the depression which set in in 1920, and no organised short-time working has been practised since 1921. In common with other sections of the industry, the fine spinning branch encountered a setback in 1926 as the result of the coal dispute, but in 1927 the mills worked practically full time throughout. Since 1922 the financial results have been on the whole not unsatisfactory. This may be seen from the following analysis of pre-war and post-war results of the Fine Cotton Spinners' and Doublers' Association Limited, a large amalgamation of undertakings engaged in fine spinning.* The figures show (a) the aggregate capital employed (including debenture, preference and ordinary stock, and reserves); (b) the percentage distributed in remuneration of capital, whether as interest on debenture stock or as dividends; (c) the percentage placed to or taken from reserves (including sums paid to employees' benefit funds, etc.) and (d) the total percentage of profit represented by the sum of (b) and (c).

Fine Cotton Spinners' and Doublers' Association, Ltd.
(Financial years ended 31st March.)

			Profit as percentage of aggregate capital employed.		
Capital Employed £'000.			Distributed.	Reserved, etc.	Total.
			Per cent.	Per cent.	Per cent.
1911	..	8,540	4·6	1·3	5·9
1912	..	9,522	4·6	0·6	5·2
1913	..	9,582	4·6	1·5	6·1
1914	..	9,731	4·7	1·6	6·3
1921	..	12,708	5·3	—4·4	0·9
1922	..	12,244	4·9	0·1	5·0
1923	..	12,256	6·2	1·5	7·7
1924	..	12,368	6·6	1·8	8·4
1925	..	12,525	6·9	3·3	10·2
1926	..	12,850	6·5	—0·8	5·7
1927	..	12,634	5·9	—1·2	4·7

From 1920–21 to 1924–25 aggregate profits were increasing, but in the last two financial years there has been a falling off. In the last seven years profits have averaged 6·1 per cent. of the capital, compared with 5·9 per cent. as the average of the four pre-war years.

* See also p. 24 above.

The Sewing Thread Combination.

The relative prosperity which has been experienced by the fine spinning section has extended also to the sewing thread industry, which is combined in a powerful trust, international in its ramifications, and headed by the closely related undertakings of J. & P Coats Ltd., and the English Sewing Cotton Co., Ltd. An analysis of the financial results of these companies, made on similar lines to that shown above for the Fine Cotton Spinners' and Doublers' Association, is as follows :—

J. & P. Coats, Ltd.
(Financial years ended 30th June.)

		Capital Employed £'000.	Profit as percentage of aggregate capital employed.		
			Distributed.	Reserved, etc.	Total.
			Per cent.	Per cent.	Per cent.
1911	..	17,038	14.5	3.7	18.2
1912	..	17,570	13.9	2.0	15.9
1913	..	17,855	13.8	2.5	16.3
1914	..	18,343	12.1	2.3	14.4
1921	..	26,243	11.2	—3.2	8.0
1922	..	25,300	11.5	1.4	12.9
1923	..	25,855	11.3	—0.1	11.2
1924	..	25,834	11.3	0.8	12.1
1925	..	26,030	11.2	2.9	14.1
1926	..	26,774	10.9	—3.3	7.6
1926*	..	25,806	5.6*	—0.6*	5.0*

* Half year to 31st December, 1926.

English Sewing Cotton Co., Ltd.
(Financial years ended 31st March.)

Capital Employed. £'000.			Profit as percentage of aggregate capital employed.		
			Distributed.	Reserved, etc.	Total.
			Per cent.	Per cent.	Per cent.
1911	..	3,512	5.4	2.5	7.9
1912	..	3,596	5.2	1.7	6.9
1913	..	3,652	5.8	3.2	9.0
1914	..	3,770	5.8	3.5	9.3
1921	..	5,075	7.6	—3.1	4.5
1922	..	4,806	8.1	—	8.1
1923	..	4,804	10.1	4.2	14.3
1924	..	4,995	9.8	3.8	13.6
1925	..	5,173	9.4	—	9.4
1926	..	5,161	9.5	—2.3	7.2
1927	..	4,980	7.8	—1.6	6.2

The Weaving Section.

The weaving section of the industry is controlled mostly by private firms and private companies, and for this reason data as to financial results of working are not generally available. It is certain, however, that while the output of cloth has no doubt been relatively low during post-war, as compared with pre-war, years, economic depression has on the whole been less severe in weaving than in spinning, and, as in spinning, the concerns engaged on the high grade work (i.e. using yarn made from Egyptian cotton) have been better situated than the others. For example, it is stated in Mr. Tattersall's Cotton Trade Review that, while 1927 was a discouraging year for manufacturers generally, the depression continued more acute in plain materials. On the other hand, a fairly steady demand was experienced in fine fabrics and fancies, and numerous makers of such goods did fairly well. On the average, production varied from about 65 per cent. of full time at the beginning of the year (with a subsequent temporary increase) to about 65 or 70 per cent. during the last six months. The Review for 1926 stated the average production throughout that year as having been about 70 per cent. of full capacity.

In commenting on the more favourable situation of weaving compared with spinning, it may be remarked that it appears to have been easier to reduce the total quantity of the weaving plant by the elimination of small concerns than it has been to reduce the quantity of the spinning plant, for it is noteworthy that the number of spindles has almost constantly increased since 1921, while the number of looms has almost constantly diminished. Beyond this is the fact that weaving establishments are less rigidly specialised to the production of a narrow range of products than are spinning mills, so that there are greater possibilities of changing the kind of goods produced to meet changes in market conditions. In this connexion it may be noted that many weavers have been making an increasing use of artificial silk yarns, and many new fabrics are being successfully manufactured.* There is no system of fixing prices in the weaving section; and, unlike the Master Cotton Spinners' Federation, the Cotton Spinners' and Manufacturers' Association have never organised short time working in the weaving sheds. The system generally adopted when trade is slack is to reduce the number of looms tended by the individual operative weavers. The weaving section of the industry almost entirely escaped the evils of over-capitalisation which afflicted the spinning section.

The Finishing Trades.

As explained on p. 27, each of the three main sections of the finishing trades (i.e. bleaching, dyeing and printing) includes a large consolidation which represents a substantial proportion of the

* See Chapter on Artificial Silk, p. 279.

trade. The financial results of these consolidations (*viz.* the Bleachers' Association Limited, the Bradford Dyers' Association Limited and the Calico Printers' Association Limited) for a series of years both before and after the war are shown in the table on page 42, which gives, in respect of each of the years 1910-11 to 1913-14 and 1920-21 to 1926-27, (a) the aggregate capital employed (including debenture, preference and ordinary stock and reserve funds); (b) the percentage distributed in remuneration of capital, whether as interest on debenture stock or as dividends; (c) the percentage carried to reserves (including sums paid to employees' benefit funds etc.); and (d) the total percentage of profit represented by the sum of (b) and (c). It should be added that in the case of the Calico Printers' Association the value of goodwill was written off out of reserve in 1923-24, and in order that the figures may be comparable throughout, the amount in question has been deducted from the capital as shown in the balance sheets for the earlier years also.

The total percentage of profit for each of the three companies has on the average been distinctly higher in the post-war than in the pre-war years. The Bleachers' Association made on the average 8.3 per cent. post-war, compared with 6.4 per cent. pre-war; the Bradford Dyers' Association 8.5 per cent. post-war compared with 5.6 per cent. pre-war; and the Calico Printers' Association 5.9 per cent. post-war compared with 5.0 per cent. pre-war.

Moreover, the post-war percentages of profit were obtained upon an increased capital, and a diminished volume of trade. The reduction of output from the finishing trades, so far as concerns cotton products, may be illustrated by the following figures for 1912 and 1924, taken from the returns of the Census of Production:—

	1924 <i>lb.</i>	1912 <i>lb.</i>	<i>Per- centage Decrease in 1924.</i>
Raw cotton and cotton waste (dyeing, etc.)	11,459,000	20,926,000	45.2
Cotton yarns (bleaching, dyeing, etc.)	183,054,000	194,538,000	5.9
Cotton Piece Goods—	<i>Linear yds.</i>	<i>Linear yds.</i>	
Bleached but not dyed or printed	1,810,101,000	2,474,224,000	26.9
Dyed but not printed	943,570,000	1,249,417,000	24.5
Printed, whether dyed or not	790,423,000	1,295,707,000	39.0
Finished only	679,964,000	(not recorded)	

COTTON.

	Bleachers' Association, Ltd. (Years ending 31st March).				Bradford Dyers' Association, Ltd. (Years ending 31st Dec., 1910, etc.).				Calico Printers' Association, Ltd. (Years ending 30th June).			
	Profit as percentage of capital.				Profit as percentage of capital.				Profit as percentage of capital.			
	Capital employed.	Distributed.	Reserved etc.	Total.	Capital employed.	Distributed.	Reserved etc.	Total.	Capital employed.	Distributed.	Reserved etc.	Total.
	£,000	Per cent.	Per cent.	Per cent.	£,000	Per cent.	Per cent.	Per cent.	£,000	Per cent.	Per cent.	Per cent.
1910-11 ..	7,335	4.5	1.1	5.6	5,695	4.4	1.1	5.5	8,201	4.3	1.8	6.1
1911-12 ..	7,519	4.6	1.7	6.3	5,758	4.6	1.2	5.8	8,344	4.2	0.8	5.0
1912-13 ..	7,635	4.8	2.2	7.0	5,820	4.6	0.9	5.5	8,279	4.3	1.8	6.1
1913-14 ..	7,821	4.7	2.0	6.7	5,888	4.7	1.0	5.7	8,427	3.3	-0.6	2.7
1920-1 ..	8,870	5.3	1.6	6.9	6,878	6.6	2.4	9.0	9,218	4.1	—	4.1
1921-2 ..	8,986	5.9	2.5	8.4	6,881	4.6	—	4.6	9,218	4.6	-0.5	4.1
1922-3 ..	9,133	7.8	1.9	9.7	6,881	9.6	4.9	14.5	9,118	5.8	4.4	10.2
1923-4 ..	9,260	7.7	2.0	9.7	7,064	7.4	3.9	11.3	9,417	5.1	2.0	7.1
1924-5 ..	9,395	7.6	2.5	10.1	7,206	7.2	2.7	9.9	9,555	6.1	2.6	8.7
1925-6 ..	9,562	7.5	1.6	9.1	7,399	6.3	-0.3	6.0	9,703	4.4	-0.9	3.5
1926-7 ..	9,549	5.5	-1.0	4.5	7,290	5.5	-1.0	4.5	9,618	4.5	-0.8	3.7

*Discussion of finishing charges.**

The relatively favourable results of trading attained in the finishing trades throughout a period of depression in other important sections of the cotton industry naturally attracted attention to the question of finishing charges, and this subject figured in the evidence submitted to the Committee on Industry and Trade by the Shipping Merchants Committee of the Manchester Chamber of Commerce.† The matter was further discussed in the evidence subsequently presented by the Federation of Master Cotton Spinners' Associations and the Cotton Spinners' and Manufacturers' Association on the one hand, and the Bleaching Trade Advisory Board, the Piece Dyers' Association, and the Federation of Calico Printers on the other. The shipping merchants, supported by the spinning and weaving sections of the industry, contended, broadly, that the charges had been raised to an unreasonable extent, causing trade to be lost and prolonging the depression in the industry. They also asserted that the charges fixed by the finishers were unduly rigid, and that no concession could be obtained from the finishers even where it was necessary to cut prices to the lowest possible figure in order to secure an order.

The representatives of the finishing trades denied that either their charges or their profits were unreasonable. They did not dispute that charges were high compared with the pre-war level, but claimed that this was due to costs, which were, to a large extent, outside their control; and they complained in particular about the price of dyestuffs. They further maintained that the condition of extreme competition which had prevailed in the finishing trades in times gone by had not made for efficiency, and that, as a result of combination, they were in a position to give, and were giving, much better service than before. As regards the alleged undue rigidity of charges, they said that it was impracticable to allow concessions from minimum rates, but in certain lines minimum charges had been fixed on a specially low basis in order to retain the trade. The divergence of view between the parties is no doubt promoted by the differences in the business organisation of the textile and merchanting processes and the finishing processes respectively. In the weaving of cotton cloth, free competition between firm and firm is the rule. There is also competition between shipping merchant and shipping merchant. In the finishing trades, on the other hand, competition so far as price is concerned is to a great extent excluded.

The conflicting claims summarised above require to be set out in more detail. It may be well, however, to point out in the first place,

* See also Appendix 4, page 129.

† As previously explained, the grey cloth produced by the weaver is sold to merchants to whose order and at whose cost the finishing processes are then carried out.

that, whatever the truth regarding the reasonableness of finishing charges, they cannot account for anything like the whole of the depression in the cotton trade. As the following figures show, the export of grey unbleached cloth, which before the war accounted for about one third (by yardage) of the total exports of piece-goods, has declined by a greater percentage than that of bleached, printed or dyed cloth, or of coloured cottons (i.e. cloth made of dyed yarn).

British Exports of Cotton Piece Goods.

Year.	Grey Un-bleached.	White Bleached.	Printed.	Dyed in the Piece.	Coloured Cottons.
	Mill. lin. yds.	Mill. lin. yds.	Mill. lin. yds.	Mill. lin. yds.	Mill. lin. yds.
1910-3 av.	2,164.2	1,889.2	1,238.0*	1,081.5	278.6
1913 ..	2,357.5	2,045.3	1,230.7	1,151.4	290.4
1921 ..	899.5	983.4	520.7	501.5	183.3
1922 ..	1,435.2	1,319.1	645.6	739.9	172.9
1923 ..	1,219.5	1,292.3	757.7	820.5	233.9
1924 ..	1,402.3	1,413.2	728.7	858.0	182.9
1925 ..	1,303.1	1,522.0	777.1	831.8	202.7
1926 ..	1,121.6	1,284.7	593.1	751.8	171.6
1927† ..	1,215.5	1,326.0	670.0	832.2	176.7
<i>Percentages of 1913.</i>					
1921 ..	38.1	48.1	42.3	43.5	45.9
1922 ..	60.9	64.5	52.4	64.2	59.5
1923 ..	51.7	63.2	61.5	71.2	80.5
1924 ..	59.5	69.1	59.2	74.5	63.0
1925 ..	55.2	74.4	63.1	72.2	69.8
1926 ..	47.6	62.9	48.2	65.3	59.1
1927 ..	51.5	64.9	54.4	72.2	60.8

* Partly estimated.

† Linear yardage estimated from square yardage.

In support of their contention that finishing charges are excessive the shipping merchants claimed to show (a) that the prices of finished goods had increased to an extent exceeding the increase in the price of unfinished goods; (b) that grey goods were being sent in large quantities to be finished on the Continent, in view of the lower level of charges there prevailing; and (c) that the prices fixed by the federations enabled very handsome profits to be made, notwithstanding that the finishing trades were working at less than the capacity.

The average value per linear yard of grey and finished cloth exported is shown in the table on page 45, as a percentage in each case of the average value in 1913.

Year.	Grey Un-bleached.	White Bleached.	Printed.	Dyed in the Piece.	Coloured Cottons.
1913 ..	100	100	100	100	100
1921 ..	266	298	378	369	397
1922 ..	218	225	258	261	264
1923 ..	224	212	237	239	227
1924 ..	244	223	246	247	242
1925 ..	232	220	243	240	235
1926 ..	199	199	231	220	224
1927 (est.)	173	175	207	192	198

The figures show that the average value of exports of finished cloth (except bleached cloth in some years) has risen more since 1913 than that of grey cloth. The inference which the shipping merchants sought to draw regarding charges for printing and dyeing was challenged by the representatives of the finishers. The latter said that the character of the trade in finished goods had changed considerably since the war. The trade in the more elaborate and expensive styles of dyed goods had been relatively better maintained than the trade in the simpler styles, and many of these goods were produced from Egyptian cotton, whereas the bulk of the grey goods was made from American cotton. In the case of printed goods, too, there had been a change in the direction of greater variety of colours from the same design, and this meant enhanced cost.* The bleachers and the dyers furnished figures indicating that, while their charges had on the average fallen substantially since 1921, they were still, in 1924, more than double the pre-war level. From the Preliminary Report of the Third Census of Production it appears that the average increase of printing charges in 1924 over the level of 1912, was greater than that of bleaching or dyeing charges.

Regarding the point made by the shipping merchants that much increased quantities of grey cloth were being shipped to the Continent to be finished, the British Trade Accounts show the following exports of grey unbleached cloth to Western Europe (Germany, Netherlands, Belgium, France, Italy and Switzerland):—

						<i>Linear yards.</i>
1913 ..	..	..	..	..	..	179,155,000
1922 ..	..	..	..	..	..	355,502,000
1923 ..	..	..	..	..	..	159,848,000
1924 ..	..	..	..	..	..	276,416,000
1925 ..	..	..	..	..	..	327,982,000
1926 ..	..	..	..	..	..	206,304,000
1927 (estimated)	..	..	..	..	..	260,000,000

* A large bleaching organisation calculated that taking 1912 as 100, the average increase per yard in their bleaching prices in 1924 was about 127%, but the increase in average value of work actually done was about 154%, this difference being due mainly to the larger proportion of finer and higher-priced work done.

The country to which the largest quantities are exported is Switzerland. In 1913 there were sent to that country 76,203,800 yards of grey cloth ; in 1924, 165,203,800 yards ; in 1925, 134,191,200 yards ; in 1926, 87,468,100 yards, and in 1927 approximately 122,000,000 yards. Switzerland possesses important finishing industries, and part of the grey cloth sent to that country is subsequently shipped, after being finished (mainly bleached and mercerised or dyed and mercerised), to other countries in all parts of the world.

The representatives of the finishing trades agreed that, particularly in dyeing and calico-printing, the competition of certain Continental countries was very intense, and the calico printers suggested that this very fact constituted in itself an ever-active influence causing them to consider how prices can be reduced. At the same time, however, the view was expressed that, since the circumstances which had encouraged competition in dyeing and printing from continental countries included such factors as lower wages, longer hours, cheaper dyewares and lighter taxation, the competitive position of the British trades was rendered much more difficult.

Some information is available from the Census of Production as to the relation between the output of finished cloth and the total yardage of grey cloth woven in the years 1912 and 1924. In comparing these figures, it should be noted that the figures for finished cloth represent the linear yardage as at the end of the finishing process ; and that as in the course of each finishing process the cloth is stretched, the linear yardage thus reckoned somewhat over-states the proportion of the grey cloth (as woven) which was sent to the finishers.* Subject to this qualification, the figures are as follows :—

Finishing process.					Ratio between output of finishing processes and total output of grey cloth.	
					1912.	1924.
					%	%
Bleached..	..	..	..	..	34	36½
Dyed ..	..	..	..	..	17	19
Printed ..	..	..	..	..	18	16
Total	..	..	..	..	69	71½

It will be seen that the output of bleached cloth and the output of dyed cloth each formed a larger proportion of the total yardage of grey cloth (as woven) in 1924 than in 1912, and that the corresponding proportion diminished somewhat in the case of printed

*For 1924 proportions based on square yardage are available, and these give the following results : Bleached 33 per cent., Dyed 17½ per cent., Printed 15 per cent. Corresponding figures are not available for 1912.

cloth. Taking together the three classes of finishing processes, the proportion of the total output of grey cloth that was subjected to finishing processes was slightly larger in 1924 than in 1912.

On the question of profits, the reply given by the representatives of the finishers was broadly that the pre-war level of profits affords an unfair basis of comparison, since it was unreasonably low ; and also that the efficiency of these trades has been greatly improved by the persistent efforts of the management and by the expenditure of large sums of money. In evidence on behalf of the Bleaching Trade Advisory Board, a witness said :—" When my Company (the Bleachers' Association Ltd.) was formed in 1900 a great many of the works were bought on a profit basis, so many years' purchase of the average of five years. There were some works, a fair number of them, that could not be bought on that basis, and they were bought on valuation plus certain additions. We found when we got to grips with those works what so often happens when firms have not been successful, they neglected their upkeep most terribly, the places were in a very bad condition both as regards buildings and machinery ; and worst of all, they did not even contain brains. Those who were in command at once recognised that very large outlays would have to take place if those works were to be put on a profit-earning basis ; and I do not hesitate to say there has been a very marked improvement in consequence of the money spent year after year on these places, and also finding out from our ranks men who are capable of supervising a business of that kind. Taking all these things into consideration, there has been a very marked effect on the fortunes of the Association Our reserves have been very largely expended in putting these derelict works, of which we had far too many at the start, into a satisfactory and efficient condition."

Again, in a memorandum furnished by the Piece Dyers' Association, it was stated :—" The Association has had a marked effect on the efficiency of the dyeing trade, and it is claimed that the intercourse between members has been of benefit to the consumer, inasmuch as it has synchronised with a higher quality of the finished article. Competition for orders remains keen, but its basis is quality not price Formerly the consumer obtained services below, at, or barely above cost price, with ill-effects alike on wages and profits, and with the inevitable effect of restriction of enterprise. Since the formation of the Association, members have gradually got into a position to extend their styles of trade, and markedly to improve their grades of production, so that the public is now far better served than formerly. This improvement in quality has become possible by keen and growing attention to research and by the substitution of scientific for rule-of-thumb methods, and is a factor which should not be overlooked in any comparison between pre-war and post-war dyeing charges."

COTTON.

The representatives of the Calico Printers similarly pointed out the ill effects which severe internal competition before the war had wrought both upon the financial condition of the undertakings and also upon their technical efficiency.

The question was raised in evidence whether, even at some sacrifice of profits, the finishing trades could without undue harm to themselves have alleviated the depression to the general advantage. In this connexion it is to be borne in mind that the finishing trades have been working well below their maximum productive capacity, and also that their overhead charges are relatively high, so that any expansion in the volume of trade which enables overhead charges to be spread over a larger surface tends to lower costs per unit.

The representatives of the finishing trades were emphatic that any possible decrease in finishing charges (and they said that a reduction of $\frac{1}{4}d.$ per yard in dyeing charges, $\frac{1}{4}d.$ per yard in printing charges and $\frac{1}{16}d.$ in bleaching charges would entirely wipe out any profit) would exert a negligible effect upon the volume of trade, while it would threaten the efficiency of the finishing industries themselves. On the other hand, the shipping merchants were equally definite that a reduction of even $\frac{1}{4}d.$ per yard in printing charges would make a substantial difference in the volume of trade; and they stated that reductions amounting to $7\frac{1}{2}$ per cent. which had been made by the dyers during the preceding year (1924) had, in fact, had a considerable effect on their business.

It is, no doubt, true that in some lines of trade, especially where there is no foreign competition, a slight reduction of finishing charges would produce no appreciable effect upon consumption; but there can equally be no question that in other lines, especially where Lancashire is in competition with foreign producers, such a reduction might exert a substantial effect upon the consumption of British goods.* The existence of such severe competition was, in fact, admitted by the representatives of the finishers, and they stated that in certain instances they had adjusted or were proposing to adjust their charges to meet it. Thus, the calico printers said that, with a view to encouraging the retention of markets in the Near East, charges for some standard kinds of prints had been fixed at no more than 50 per cent. above the pre-war level. At this price the goods were not contributing their full share to on-costs, but they helped to keep the machinery busy. The dyers also stated that in order to recover lost trade they were trying, in agreement with the merchants, to fix specially low charges—possibly below cost—in respect of particular classes of goods. Such co-operation between

* Certain reductions in bleaching charges were announced in January, 1928, and these were concentrated on types and widths of cloth (made from medium and coarse counts) which had suffered most heavily from competition.

the finishers and the merchants is obviously in the interests of the trade as a whole. Much of the criticism levelled by the merchants at the high cost of finishing may be due to a feeling that co-operation is not carried far enough, and that trade is being lost for that reason.

As regards the question of rigidity of charges (on which, as mentioned above, the shipping merchants laid stress), it is clear that, from the nature of the case, costs in the finishing trades (which consist mainly of wages, overhead charges and expenditure on such items as chemicals, dyestuffs and coal) are much less liable to fluctuation than the cost of yarn or cloth which depends to such a large extent on the price of cotton. The representatives of the finishing trades claimed that stability of finishing charges is in the interests of the shipping merchants, who could not satisfactorily conduct their business unless they could reckon with some certainty what the finishing charges would amount to. Thus in some markets such as India, there is a system of contract in which the shipper is often booked for months ahead, and it is imperative that he should know what his finishing charges are. Further "in the matter of grey cloth," it was remarked in evidence given to the Committee, "he (the shipping merchant) can go to a great number of people to get it; with prices varying from day to day he can buy his stuff from 20 different mills; but in the matter of getting his dyeing done, that dyeing is very often repeat work of a particular dye by a particular dyer, and he cannot go all over the place to all and every dyer, because he might not get their repeat work. The art of dyeing plays a very important part in the ultimate product, so that it is much better for him to know where he is with his dyeing charges, so that he can quote forthwith."

While it is, no doubt, generally in the interests of shippers that finishing charges should be reasonably stable, so that they can accept repeat orders and contract ahead, the merchants stressed the importance of flexibility in finishing charges, which would make it possible to secure orders in certain cases at a cut price where the full market price could not be obtained. The bleachers pointed out that with a price association of, perhaps, 100 firms it was impossible to give a preference in a particular case without doing the same in all other cases. The Federation of Calico Printers claimed that their price arrangements were "as simple, as reasonable, and as elastic as they can be made." It was necessary to proceed by way of minimum price lists, below which orders could not be taken. The minimum charges fixed by the piece dyers are also rigid, though there is an arrangement by which rebates are given to firms which place more than a certain proportion of their orders with members of the Piece Dyers' Association.

In conclusion, one further aspect of the problem of finishing charges may be referred to, namely, the adjustment of the charge

to the length of the run. In the calico printing industry in particular, costs of production are materially affected by the length of cloth printed from a single design, since each design has to be engraved on a separate roller, and short runs mean frequent change of rollers and loss of time. An inducement up to $\frac{3}{4}$ d. per yard has been given to customers to increase the length of the run, but it is nevertheless stated that short runs and exclusive designs are becoming more common. Whatever may be the relative advantages and disadvantages of "mass production," both to the calico printing trade and to its customers, it is clearly very important to the customers that where costs can be reduced, as in the case of long runs, they should be given the full advantage of such reductions.

On the general question, it appears that the limits within which it is practicable and advantageous to charge what the trade will bear can (like other problems affecting the cotton industry) only be explored and settled by the parties concerned acting in concert. While it may be true that the successive stages of spinning, weaving, finishing and marketing are as a rule best carried on separately, it cannot be denied that separation carries with it the possibility of incidental disadvantages, and not least when the undertakings at one stage are strongly combined. It is clearly of great importance that the disadvantages of separation should be reduced to the smallest possible compass, for the interests of all the parties concerned are fundamentally the same.

IV. BRITISH TRADE IN COTTON YARNS AND MANUFACTURES.

The purpose of this Section is to examine the principal changes which have taken place in the direction and character of British trade in cotton yarns and manufactures (particularly piece goods). In Section V the position of the British industry and trade will be considered in relation to the cotton industry and trade of the world.

Dependence of the industry on export trade.

Turning first to the allocation of output as between the home trade and the export trade, the table on page 51, which is based upon estimates of Professor G. W. Daniels and Mr. J. Jewkes,* states the position in terms of yarn.

* See papers on "The Comparative Position of the Lancashire Cotton Industry and Trade" (Read before the Manchester Statistical Society on 12th January, 1927) and "The Post-War Depression in the Lancashire Cotton Industry" (Read before the Royal Statistical Society on 17th January, 1928).

Estimated production and export of Yarn (including yarn in piece goods, etc.) from United Kingdom.
(Millions of lb.)

Year.	Estimated Total Yarn Spun.	Estimated Yarn Exported.	Percentage of Yarn Exported.
1913	1,922	1,432	75
1920	1,512	960	63
1921	971	677	70
1922	1,368	981	72
1923	1,230	895	73
1924	1,352	942	70
1925	1,492	990	66
1926	1,296	896	69

The total production of yarn in 1924 (1,352 million lb.) as estimated for the above table differs but slightly from the amount shown in the Census of Production of that year (1,379 million lb.).

The estimated quantity of yarn exported does not include yarn embodied in lace or hosiery which is exported. The figures suggest that the depression has affected both the home and the export trade, but that it has hit the export trade rather more severely than the home trade. In 1925 indeed the quantity of yarn retained in this country was practically the same as in 1913, though it does not follow that the amount consumed was as great, since there is no information regarding changes in the amount of stocks.

The following table shows the relation between production, exports and imports of piece goods in the three Census of Production years.

Year.	Production.	Exports.	Net Imports.	Percentage of Exports to Production.
Million Linear Yards.				Per cent.
1907	7,088	6,298	65	88.9
1912	8,044	6,913	98	85.9
1924	5,426	4,627*	31	85.3

* Excluding exports to the Irish Free State.

The Preliminary Report of the Third Census of Production (Board of Trade Journal, 3rd March, 1927) comments as follows on the table :—

“ The linear yardage of piece-goods shown in the returns of production was greater than that of the excess of exports over imports in 1907 by 855 million yards. In 1912 the corresponding excess was 1,229 million yards and in 1924 it was 830 million

yards. Thus the yardage apparently available for uses other than export as piece-goods was somewhat less in 1924 than in 1907, but in 1912 the corresponding yardage was much greater than in either of the other two years."

The figures appear to indicate that the amount of cotton cloth finally retained for use in the home market was considerably less in 1924 than in 1912, but a quantitative estimate of the reduction is not possible in the absence of information as to the amount of cotton cloth exported in the form of made-up goods, clothing, etc. Such falling-off in consumption in the home market is probably to be accounted for by such factors as change of fashion in regard to the length of women's dresses, diminished use of linings, the relatively high price of cotton yarns and manufactures, and possibly changes in the tastes and requirements of considerable sections of the population, resulting in an altered distribution of their expenditure. The extent and causes of depression in the different export markets can be gauged only after detailed enquiry.

Comparability of Statistics.

Before proceeding to examine the state of the export markets, reference should be made to one or two general factors which affect the full comparability of the statistics in terms of which the export trade will be represented, namely pounds' weight of yarn and linear yards of piece goods. Measurement by weight or length takes no account of quality, and it is certain that the average quality of the yarns and piece goods exported is superior to what it was before the war. It has already been noted that the fine spinning branch of the cotton industry is much less depressed than the American section, which is engaged on the production of medium and coarse counts; and that the number of spindles engaged in spinning Egyptian cotton has increased both absolutely and relatively. In the weaving branch also looms engaged on the production of fine and fancy goods are relatively well employed. Professor Daniels and Mr. Jewkes* have sought to measure the extent of the qualitative changes. From a comparison of pre-war and post-war average values of exported piece goods with data relating to values of certain representative types of cloth, they found that, taking into account the improved average quality, exports of cotton piece goods in 1922-24 represented 72 per cent. of the exports of these goods in 1913, as compared with only 62 per cent. on the basis of linear yardage.

With reference to these figures in particular and to the trade statistics of cotton piece goods generally, it may be noted that piece goods made of artificial silk and cotton are not included with cotton piece goods. They are now separately distinguished, and in 1926 (the first complete year for which information is available) exports of these piece goods amounted to 60,416,222 square yards, valued at

* Economic Journal, March, 1927.

£4,227,984, equivalent to some 1·58 per cent. of the square yardage and 3·64 per cent. of the value of cotton piece goods exported during that year. In 1927 exports of these goods totalled 72,431,463 square yards valued at £4,598,036 equivalent to 1·76 per cent. of the square yardage and 4·18 per cent. of the value of cotton piece goods exported during 1927. If account were taken of these artificial silk and cotton piece goods, which are largely manufactured by the "cotton industry," the effect would be to show an improvement of quality slightly greater than is indicated above, since these goods have come into fashion mainly since the war; and the extent of the depression in the export trade as indicated by the statistics of cotton piece goods alone would be fractionally diminished.

Quantitative pre-war and post-war comparisons relating to piece goods are inevitably made in terms of linear yardage, as it was not until 1920 that square yardage and weight of piece goods imported and exported were recorded in the trade accounts. The returns for the latter year did not record linear yardage, but in 1921 and thereafter linear yardage was recorded as well as square yardage and weight. Comparison of linear and square yardage shows that since 1921 the average breadth of piece goods exported has varied little (about $1\frac{1}{2}$ per cent.) from year to year. The variation in particular markets has been greater, and it should be added that there is a substantial difference in the average width of cloth sent to different markets in the same year. In comparing pre-war and post-war years it cannot be assumed that the average width even of all piece goods exported has changed insignificantly, especially as there has been variation in the relative importance of different markets. Figures of linear yardage, therefore, give a more or less imperfect representation of quantitative changes.

Another point to which attention should be drawn is the fact that the establishment of the Irish Free State as a separate Customs area, which took place on 1st April, 1923, affects to some extent the comparability of import and export statistics before and after that date. As regards the cotton industry, the principal effect was that yarns and manufactures sent to the Free State and regarded as internal trade of the United Kingdom prior to 1st April, 1923, were after that date regarded as export trade. The exports of cotton yarns and piece goods to the Irish Free State in 1924, 1925 and 1926 were as follows :—

			<i>Cotton Yarns</i>	<i>Cotton Piece Goods</i>
			<i>lb.</i>	<i>Linear Yards.</i>
1924	..	..	577,700	20,821,300
1925	..	..	780,500	21,837,000
1926	..	..	580,100	26,472,600

In 1926 exports to the Free State represented in the case of yarn 0·4 per cent. and in the case of piece goods 0·7 per cent. of the total exports of those articles from the United Kingdom.

Analysis of exports by destinations.

The two following tables show the quantities of cotton yarns and piece goods exported to various destinations in 1913, 1924, 1925 and 1926, and also in 1927, so far as statistics are available. For information as to the development of exports to the most important markets during the period 1820-1911, reference should be made to Tables 7 and 8 in Appendix 6, pp. 148-9.

Export of Cotton Yarns from United Kingdom.

To	1913. Th. lb.	1924. Th. lb.	1925. Th. lb.	1926. Th. lb.	1927. Th. lb.
Europe	134,444	121,125	153,702	124,106	146,977†
Of which to—					
Germany	51,905	42,757	56,646	33,858	56,803
Netherlands ..	39,255	36,304	50,415	37,584	41,756
Belgium	4,668	5,252	5,744	6,663	8,592
France	4,991	6,764	5,283	7,996	3,825
Switzerland ..	9,494	9,822	8,192	7,825	10,395
British India ..	37,422	20,186	15,998	20,495	21,555
Other Far East ..	6,042	3,189	2,399	3,971	(?)
U.S.A. and Canada	8,943	4,654	4,208	4,440	4,466
South America* ..	6,731	5,847	4,940	4,897	(?)
Other Countries ..	16,518	8,055	8,284	10,618	(?)
Total	210,099	163,056	189,531	168,527	200,502

* Colombia, Chile, Brazil, Uruguay and Argentina.

† Incomplete total.

Exports of Piece Goods from the United Kingdom.
(Millions of Linear yards.)

To	1913.	1924.	1925.	1926.	1927.*
British India—					
Grey	1,483.1	730.4	597.0	664.9	683.6
Bleached	782.1	490.5	442.8	472.9	502.0
Printed	470.0	184.4	177.7	172.7	205.8
Dyed	286.0	138.8	109.9	141.5	148.0
Coloured Cottons	36.1	9.1	8.1	8.0	7.0
Total	3,057.3	1,553.2	1,335.5	1,460.0	1,546.4

* Provisional Estimates. Square yards have been converted into linear yards in this year, on the basis of the relation shown by the Trade Accounts to have prevailed in 1926. The particulars given for groups of countries are in some cases incomplete as no attempt has been made to allocate the exports to countries for which separate totals are not published in the Trade Accounts for December, 1927. Exports to these countries represented 4.1 per cent. in quantity of the total exports of piece goods to all countries. The unallocated exports for 1927 are included in the totals for all countries on p. 57.

To	1913.	1924.	1925.	1926.	1927.*
China, Japan, Hong Kong, etc.—					
Grey	264.8	40.1	23.3	23.0	9.8
Bleached.. ..	274.6	150.5	94.8	95.9	56.5
Printed	36.6	31.6	18.5	11.5	10.7
Dyed	189.4	112.4	61.7	70.5	46.8
Coloured Cottons	7.8	5.8	3.9	3.8	4.2
Total	773.2	340.4	202.2	204.7	128.0
Dutch East Indies, Ceylon, Straits Settlements, etc.—					
Grey	82.9	27.4	34.0	23.9	27.1
Bleached.. ..	151.6	104.4	151.0	103.8	124.1
Printed	158.3	86.6	113.6	86.1	75.7
Dyed	99.1	69.3	88.2	68.9	84.0
Coloured Cottons	47.3	13.2	21.1	16.9	15.9
Total	539.2	300.9	407.8	299.6	326.8
South America—					
Grey	45.8	29.1	24.3	15.1	15.4
Bleached.. ..	182.2	128.3	182.3	134.1	113.8
Printed	125.1	84.4	80.0	55.9	61.1
Dyed	155.3	126.5	154.5	132.4	150.9
Coloured Cottons	73.7	43.9	51.0	46.1	37.1
Total	582.1	412.2	492.1	383.6	378.3
Mexico, Central America and West Indies—					
Grey	8.2	1.6	2.4	3.2	2.3
Bleached.. ..	62.5	31.9	33.7	27.7	23.3
Printed	27.4	17.3	14.4	12.0	16.9
Dyed	38.7	34.7	34.7	30.5	26.7
Coloured Cottons	30.8	11.6	10.4	6.7	6.9
Total	167.6	97.2	95.5	80.1	76.1
United States and Canada—					
Grey	28.4	134.5	74.2	36.1	36.2
Bleached.. ..	49.5	21.6	19.9	20.0	19.0
Printed	28.4	15.5	10.8	11.3	11.5
Dyed	42.2	30.4	23.7	23.1	19.3
Coloured Cottons	8.6	11.0	6.9	6.9	7.1
Total	157.1	213.0	135.5	97.5	93.1

* See footnote on p. 57.

To	1913.	1924.	1925.	1925.	1927.*
Australia and New Zealand—					
Grey	35.3	25.3	34.9	34.3	39.0
Bleached	65.9	49.6	55.4	53.1	51.8
Printed	38.0	27.3	30.2	33.8	35.3
Dyed	59.7	62.0	62.9	67.6	70.9
Coloured Cottons	11.8	19.9	20.5	22.1	23.8
Total ..	210.7	184.1	203.9	210.9	220.8
Europe (excepting Balkans)—					
Grey	198.0	306.0	366.9	235.2	286.8
Bleached	69.3	59.6	56.8	45.1	41.5
Printed	32.4	42.1	39.8	28.8	24.2
Dyed	83.1	84.9	84.6	63.5	52.4
Coloured Cottons	6.1	6.0	6.0	6.9	8.0
Total ..	388.9	498.6	554.1	379.5	412.9
Balkans, Near and Middle East—					
Grey	94.0	36.1	43.2	26.5	17.9
Bleached	147.4	119.9	154.1	103.2	100.4
Printed	138.5	116.7	141.5	63.3	79.1
Dyed	81.4	69.6	72.6	47.1	69.7
Coloured Cottons	16.3	23.4	20.8	9.1	10.2
Total ..	477.6	365.7	432.2	249.2	277.8
North Africa—					
Grey	87.2	49.1	64.0	27.6	45.2
Bleached	155.5	158.4	179.8	121.3	121.0
Printed	72.8	50.7	52.3	31.4	37.2
Dyed	37.0	47.9	48.4	28.1	31.7
Coloured Cottons	4.9	8.9	13.0	7.5	6.8
Total ..	357.4	315.0	357.5	215.9	241.9
West Africa—					
Grey	14.0	13.8	29.1	22.6	26.1
Bleached	71.1	67.6	115.8	77.0	80.5
Printed	75.8	43.5	68.6	54.1	59.7
Dyed	44.3	27.9	37.5	25.4	30.3
Coloured Cottons	38.0	23.8	34.4	30.8	35.3
Total ..	243.2	176.6	285.4	209.9	231.9

* See Footnote on p. 57

To	1913.	1924.	1925.	1926.	1927.*
South and East					
Africa—					
Grey	16·0	6·7	7·1	6·2	5·8
Bleached	33·4	26·5	31·8	26·8	33·6
Printed	27·4	24·6	24·7	26·0	25·4
Dyed	35·2	43·8	43·5	40·9	39·5
Coloured Cottons	8·9	5·6	5·9	5·6	4·1
Total ..	120·9	107·8	113·1	105·5	108·4
Total—All Countries—					
Grey	2,357·5	1,402·3	1,303·1	1,121·6	1,215·5*
Bleached	2,045·2	1,413·2	1,522·0	1,284·7	1,326·0*
Printed	1,230·8	728·7	777·1	593·1	670·0*
Dyed	1,151·4	858·0	831·8	751·8	832·2*
Coloured Cottons	290·4	182·9	202·7	171·6	176·7*
Total ..	7,075·3	4,585·1	4,636·7	3,922·8	4,220·4*

* See footnote on p. 57.

In the yarn trade the outstanding features in the years 1924–26 were the maintenance of exports to Europe (which was and is by far the largest market for British yarns) at or near the pre-war level, and the reduction by about half in exports to other parts of the world. The loss of trade with India may be particularly noted, as that is the principal non-European market for British yarns. In 1927, the total British exports of yarn were only about 5 per cent. below the level of 1913 and the exports to Europe were greater than in that year.

In the piece goods trade the worst feature is the falling-off in exports to British India and to China, Japan and Hong Kong.* The trade in grey unbleached piece goods to China and Japan has almost disappeared. Exports of bleached goods to India have been maintained better than exports of grey, dyed or printed goods. The trade with the remaining Far Eastern markets (Dutch East Indies, Ceylon, Straits Settlements, etc.) does not show a loss proportionate to that suffered in the Indian and Chinese markets. The decline is relatively greatest in grey unbleached goods and in coloured cottons.

Other groups of markets in which British trade is below the pre-war level are represented by South America and Mexico, Central America and the West Indies. In these markets the position in regard to goods dyed in the piece appears to be relatively satisfactory ; and in the case of South America the position in regard to bleached goods is also relatively favourable.

* For an analysis of the competitive position in a number of important markets, see Appendix 2, p. 84.

Outside the Far Eastern and South and Central American countries the British export trade in piece goods has been fairly well maintained in a number of markets, as for example the three divisions of Africa, apart from the decline in North Africa in 1926 and 1927. In some cases (e.g. Australasia) the pre-war level has been surpassed. Exports to Europe (excepting the Balkans) were substantially greater over the four years 1924-27 than in 1913, but the gain is practically confined to grey unbleached goods, and may be, to some extent, connected with the trade in goods for finishing on the Continent—a point referred to earlier in this Chapter. (*see* page 45). It may, however, also be noted that Customs duties upon grey cloth, are usually lower than upon finished cloth, thus tending to encourage importation in the unfinished rather than the finished state. In the cases of the United States and Canada (taken together) and the Balkans, the post-war years seem to indicate a declining tendency. In total exports and in exports to nearly all the markets, the year 1926 showed a decline as compared with 1925—a result presumably of the dislocation of industry in 1926 by the general strike and the coal stoppage. In all except the various American markets and China and Japan, 1927 registered an improvement as compared with 1926, though in most cases the figures were still below those of 1925.

Qualitative Changes in Export Markets.

Reverting to the question of qualitative changes in the export trade, Professor Daniels and Mr. Jewkes in their paper read before the Manchester Statistical Society analysed the position in the 53 most important markets. Grouping the markets according to the value per 1,000 yards of the exports to each market in 1913, they found that the falling-off in trade had been greatest in the "cheapest" markets, and smallest in the most expensive markets. In fact, the most expensive group of markets showed an increased trade :—

Classification of Fifty-three important Export Markets according to Value per 1,000 yards of Exports in 1913, showing Percentage decline in each Group.

Group of Markets with 1913 value per 1,000 yards	Total Exports in 1922-24 of Cotton Piece Goods (by linear yardage) to each group (1913 = 100).
Up to £14	50 per cent
£14 to £17	58 " "
£17 and above	114 " "

The effect of the falling off being greatest in the markets for the cheapest goods is obviously to increase the average quality of exports. But the change in the distribution of trade is not the only reason for the improvement in quality. In individual markets it is found that quality has improved even where there is no falling off in total trade, or it is found that the decline is greater in the poorer than in the better classes of goods. Professor Daniels and Mr. Jewkes conclude that the grading up of quality is revealed as the cumulative result of several distinct factors, any or all of which may have operated in any individual market :—

- (1) Taking the total exports of cotton piece goods, the decline has been greater in the cheaper classes of goods.
- (2) The decline in exports has been more marked in the markets taking cheaper classes of goods.
- (3) In certain markets to which exports have declined to the greatest extent, the decline has been more than proportional in the cheaper classes of goods.
- (4) In certain markets where no important decline has occurred the quality has improved.

V. THE BRITISH COTTON INDUSTRY AND TRADE IN RELATION TO THAT OF THE WORLD.

In Section IV an examination was made of the position of British trade in cotton yarns and piece goods before and since the war. The purpose of the present Section is to consider the position of the British cotton industry and trade in relation to the cotton industry and trade of the world, and to note some outstanding changes which have taken place since before the war.

With a view to throwing light on this matter the following Tables have been prepared showing the quantity and value of yarns and piece goods exported both before and after the war from the leading countries in respect of which approximately comparable figures can be given.* Values are given in sterling, pre-war conversions having been made at par of exchange and post-war conversions at the average rate of exchange of the year. The units of quantity employed for the official returns of each country have been retained, except that quantities shown in weight have been converted, where necessary, into metric tons (2,204 lb.) for the sake of uniformity. Exports of yarns are in all cases shown by weight, so that complete comparison on the basis of weight is there possible. Exports of piece goods, on the other hand, are shown by some countries in weight and by other countries in other units of quantity (linear yards, square yards, or pieces) or in value only.

* For figures covering the period 1902 to 1913, see Tables 16 and 17 in Appendix 6, pp. 156-7.

In the United Kingdom, quantities of piece goods exported were returned before the war in linear yards only, but since the war information has been obtained also as to the square yardage and weight.

Statistics of quantities (whether weight or yardage) naturally take no account of the quality of the articles concerned. Fine yarn, which enters largely into the British export trade, weighs comparatively little in proportion to its value or to the work embodied in it, while coarse yarn, such as forms the great bulk of the exports from India and Japan, weighs comparatively heavy. A similar contrast applies as between fine and coarse cloth, while cloth in the finished state, such as is exported largely from Great Britain, tends to embody more work and value in proportion to its weight or yardage than cloth in the grey state. It may be noted, however, that some cloths may contain a considerable amount of "filling," adding materially to their weight but little to their value. The character of the cotton textile products exported from different countries varies widely, and the existence of these differences should be borne in mind when comparing figures of quantity, as it is obvious that a ton of yarn, or a ton (or yard) of piece goods, may be widely different according to the country from which it comes. The differences are reflected in the values of the articles exported, as may be seen from the following examples, though it should be noted that methods of determining export values vary and comparisons between countries may therefore not be exact.

The average export value per metric ton of yarn was highest in Switzerland (£174 in 1910-13 and £300 in 1926); somewhat lower in the United Kingdom (£153 in 1910-13 and £285 in 1926); and substantially lower in other European countries (e.g., Germany £124 in 1910-13 and £166 in 1926, and Belgium £92 in 1910-13 and £135 in 1926). Exports of yarn from British India averaged £72 per metric ton in 1910-13 and £122 in 1926, and from Japan £85 in 1913 and £185 in 1926; while the value of yarn exported from all countries for which figures are given in each period averaged £109 per metric ton in 1910-13 and £225 in 1926.

As regards piece goods, Switzerland, with its large trade in embroideries, again leads with an average value per metric ton of £282 in 1910-13 and £688 in 1926. The average value of piece goods exported from the United Kingdom (£340 in 1926) and France (£185 in 1910-13 and £306 in 1926) is considerably lower; while the average value of exports from Germany (£205 in 1910-13 and £311 in 1926) was above the figure for France in the pre-war period, though not in 1926. The average values per ton of exports from British India, Japan and the United States are uncertain, since the weight of exports from those countries is a matter for estimate. In the case of the two former the average values are certainly low, the average quality of the cloth being very coarse.

INTERNATIONAL TRADE.

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Exports of Cotton Yarns and Piece Goods from certain Countries.

		Quantities.				Values (in Thousands of £).			
		1910-13 Average.	1924.	1925.	1926.	1910-13 Average.	1924.	1925.	1926.
(a) Cotton Yarns.									
From									
United Kingdom	..	88,618	73,862	85,994	76,471	15,057	27,782	30,501	21,784
France	..	5,955	14,576	9,597	7,189	6,368	6,368	2,563	2,083
Germany	..	12,978	6,163	5,529	6,853	1,592	1,901	1,919	1,471
Belgium	..	5,604	9,430	10,508	8,269	1,768	1,768	1,919	1,471
Italy	..	13,796	17,194	15,993	18,941	1,843	3,402	2,601	2,261
Switzerland	..	3,298	6,608	7,639	5,568	2,860	2,860	2,673	1,573
Sweden	..	..	18,186	26,399	17,769	(a)	3,157	3,949	2,392
British India*	..	83,531	16,575	14,432	18,396	5,994	2,707	2,214	2,305
Japan	..	69,325	48,679	55,961	37,010	5,866	10,413	10,414	6,860
United States	..	(a)	6,204	9,993	10,906	1,23	1,661	2,463	2,467
Total of above†	..	286,455	199,431	215,756	186,963	31,259	57,672	57,662	42,086
(b) Cotton Piece Goods (returned by weight).									
From									
United Kingdom	..	40,800	55,045	42,774	46,797	7,504	26,668	17,293	15,246
France	..	89,556	20,483	19,803	16,357	3,186	7,054	6,678	6,175
Germany	..	27,208	26,108	23,721	27,696	3,106	5,696	6,753	6,490
Belgium	..	(a)	(a)	26,696	26,106	(a)	6,617	8,525	7,618
Netherlands	..	(a)	2,327	3,131	2,901	1,431	940	1,674	1,589
Spain	..	5,247	53,102	66,524	67,624	6,254	17,196	19,098	15,160
Italy	..	41,201	68,423	68,423	65,131	1,183	5,647	3,622	3,622
Switzerland	..	4,261	32,114	40,861	34,989	(a)	11,797	13,618	10,868
Czechoslovakia	..	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
(c) Cotton Piece Goods (not returned by weight).									
From									
United Kingdom‡	..	6,651	4,585	4,637	3,923	86,650	183,448	180,628	116,059
France	..	89	132	165	197	1,401	6,016	4,647	5,474
Germany	..	156	980	1,213	1,346	1,917	28,201	38,865	36,783
Japan	..	6,978	3,363	4,170	4,107	596	1,844	2,048	2,102
Th. Pieces	..	..	..	..	..	..	..	..	..
Total Value for Japan (including articles otherwise enumerated)	..	..	..	..	..	2,540	31,025	36,612	40,374
United States, Mill. lin. yds.	..	385	—	—	—	5,467	16,951	—	—
United States, Mill. sq. yds.	..	—	479	544	614	—	—	18,413	15,912
Total Value of Piece Goods (b) and (c)**	..	—	—	—	—	126,725	270,680	266,129	225,905

* Exports by sea only. † Excluding Czechoslovakia. ‡ Excluding Netherlands and Czechoslovakia. § The weight of British exports of piece goods was not ascertained prior to 1920. It amounted (in metric tons) to 371,632 in 1924, 382,143 in 1925 and 341,087 in 1926. (a) Comparable figures not available.

Development of the cotton industry in other countries.

Before proceeding to discuss the position of Great Britain as indicated by the above statistics, it is desirable to review briefly the situation in the other countries shown in the Table, with special attention to the changes which have occurred since the years immediately preceding the War. Reference has already been made (pp. 11-13) to the growth of the cotton industry abroad during earlier years, and to the general course which its development followed. It was pointed out that, while the development of the industry in different countries has been affected by local circumstances such as availability of raw materials, access to markets for cotton goods, cost of labour, restrictions on working conditions or hours of labour, as well as by the operation of protective tariffs, the spread of the industry is not limited to countries possessing special advantages, such as native supplies of raw material, or a body of highly skilled labour. By making it difficult to obtain imported goods, the war gave a great impetus to the establishment or development of local manufacturing industries in many non-European countries, and the cotton industry was one which could easily be developed, since no great skill on the part of labour is required to produce coarse yarns and fabrics by modern automatic or semi-automatic machinery; and the market (and frequently the raw material) is on the spot. The industry has therefore come to be established on a smaller or greater scale in a large number of countries, and further expansion is probably to be anticipated. It is important to remember, however, that in the earlier stages of development in any particular country, the industry tends to be limited to the easier operations, such as the spinning of coarse counts of yarn and the weaving of coarse cloth of low quality. In this connexion the figures given on page 152 as to the proportion of mule spindles (representing higher grade production) in the total spindleage of the various countries show how widely even the principal producing countries vary in the character of their spinning machinery, and how far ahead of all others the cotton industry of Great Britain is in this respect. It is not, of course, implied that this country can witness with equanimity the loss of the less fine trade to competing countries, but the relative superiority of Great Britain in the quality of its products (a point attested also by the high proportion of Egyptian cotton consumed in this country) must be borne in mind in considering the development of the cotton industry and trade in other countries.

Various kinds of statistical data are used for comparing the relative importance of different countries as regards cotton textile production. In countries like India and China, hand-spinning and hand-weaving still remain important factors in production, but from the point of view of international trade, attention may be confined to machine production in factories. From this point of

view, one country may be compared with another by reference to the number of spindles and looms installed. This criterion, however, is subject to certain qualifications. In the first place it relates to quantity rather than to quality, though some indication on the latter head is afforded by the character of the machinery, e.g. (as explained above) by the relative predominance of "mule" or ring spindles or of automatic or other looms in the equipment of the different countries. In the second place, the amount of machinery is not by itself a complete measure of productive power even on a quantitative basis, for account must be taken of factors such as the efficiency of the labour available for working the machinery and the number of hours per day or week during which the machinery may be (or, in fact, is) run in the several countries. As regards efficiency of labour, this is no doubt an important factor in the production of fine counts of yarn and high quality piece goods, but much less important where course counts of yarn and inferior descriptions of cloth are concerned, for the machinery is so highly developed that these can be produced satisfactorily even by low skilled labour. As regards the running time of the machinery, this is of great relative importance, for both in spinning and in weaving the output depends predominantly on the speed of the machines, and if these are running full speed the volume of production in different countries will be limited by the length of the working day or week. In most of the countries concerned, hours of labour are regulated by public enactment or by agreement, but different countries show great variations in the hours so fixed. Some particulars compiled by the Cotton Spinners' and Manufacturers' Association as regards the principal countries are given in Appendix 2, p. 122, and it will be seen that, when the hours during which the machinery is running are taken into account, the same amount of machinery installed in different countries may represent very different productive capacities.*

In the third place, comparative statistics of pre-war and post-war spindleage give no indication of changes in the actual volume of production, and it would obviously be desirable, if it were possible, to compare the actual pre-war and post-war output of yarn (as well as of manufactured goods) in each country, showing both quantities and values. But such figures are not, as a rule, available, and in default it is necessary to fall back upon figures showing the estimated mill consumption of cotton in the different countries. These statistics are only an imperfect measure of actual production in view of the wide differences in the quality of the cotton consumed and in the quality of the yarn spun in different countries.

* The particulars given in the Appendix relate only to normal or maximum hours of work and if short time prevails in one country (as has been the case in the "American" spinning section in Lancashire), while two shifts are worked elsewhere (as in Japanese spinning mills), the difference is *pro tanto* intensified.

It must, moreover, be remembered that statistics as to spindles, looms, or cotton consumption in different countries only carry the comparison up to the stage of grey cloth production, and that countries vary widely in the "finishing" facilities (bleaching, dyeing and printing) which they offer. Comparative statistics on this point are not available, but it is certain that Great Britain is ahead of every other country if not only the capacity of the finishing plant but its technical efficiency is taken into account.

A good deal can be learned, however, by comparing the various criteria, and particulars of the numbers of spindles and looms in various countries and the cotton mill consumption in the same countries will be found in Tables 10 to 15 in Appendix 6 (pages 151-5). It is clear from those Tables that the principal producing countries are the United Kingdom, United States of America, Germany, France, Italy, India and Japan. Among the smaller European producers are Czechoslovakia, Belgium, Switzerland, the Netherlands, and Spain. China has greatly increased its productive power since 1914 and is potentially of great importance as a producer; but in view of the enormous demand for cotton goods in China, the increase of production in the country has gone mainly into home consumption and has not given rise to an important export trade.

The following Table shows how each of the principal countries stands as regards its percentage of the World's (1) Spindles; (2) Looms; and (3) mill consumption of cotton:—

		Percentage of World's spindles.		Percentage of World's looms.	Approximate per- centage of World's mill consumption. of cotton (by weight).	
		1913.	1927.	1925 (unless otherwise stated).	Year 1912-13.	1925-26 to 1926-27 (av.)
Great Britain	..	39.8	35.0	25.3	20.3	13.0
United States	..	21.5	22.7	24.5†	26.6	28.7
Germany	.. ..	7.7	6.6	7.7 (1923)	7.8	5.4
France	.. ..	5.2	5.8	5.8	4.7	5.0
Italy	.. ..	3.2	3.0	4.2	3.5	4.0
India	.. ..	4.5	5.3	4.9 (1924)	7.9	7.9
Japan	.. ..	1.6	3.5	2.1* (1924)	6.2	10.3
China	.. ..	not avail- able.	2.1	0.7* (1924)	not avail- able.	6.2
Total	..	82.8†	84.0	75.2	77.0†	80.5

* Includes latest returns available.

† Excluding China.

‡ 1924 U.S. North (including Western States), 1925, U.S. South.

Comparable pre-war statistics of looms on a world basis are not available, but the following table (compiled from Tattersall's "Cotton Trade Review") shows how the looms owned by the principal countries were divided among those countries in 1914 and 1926:

Country.	Percentage of total looms owned in principal countries.	
	1914.	1926.
	per cent.	per cent.
Great Britain	38.3	33.3
United States	33.1	32.2
Germany	10.9	10.2
France	5.1	7.7
Italy	6.7	5.9
India	4.5	6.5
Japan	1.2	3.1
China	0.2	1.1
	100.0	100.0

The percentages showing cotton mill consumption are based on the information given in table 15, p. 155, approximate weights having been obtained from that table by converting the various descriptions of bales at their average weights. In considering the percentages, it is desirable to take account of the proportions of the different qualities of cotton included in each country's consumption, for a country such as Great Britain, which produces relatively fine counts, consumes per spindle a relatively smaller quantity of cotton of a higher value per pound than a country which produces relatively coarse yarns. The following table shows the percentages of various kinds of cotton (by weight) which were included in each country's total consumption in the periods in question:—

Country.	American.		East Indian.		Egyptian.		Sundries.		Total.
	Year 1912-13.	1925-26 to 1926-27 average	Year 1912-13.	1925-26 to 1926-27 average.	Year 1912-13.	1925-26 to 1926-27 average.	Year 1912-13.	1925-26 to 1926-27 average.	
Great Britain ..	82.6	66.9	1.0	3.2	13.4	18.4	3.0	11.5	100
Germany ..	79.3	80.9	8.7	11.4	9.7	8.4	2.3	1.3	100
France ..	78.5	69.9	7.3	10.7	11.8	13.1	2.4	6.3	100
Italy ..	75.2	72.4	18.1	17.8	3.8	3.0	2.9	1.8	100
Japan ..	31.5	40.8	57.7	52.9	1.8	2.4	9.0	3.9	100
India ..	5.4	9.6	84.4	87.8	0.1	0.4	0.1	2.2	100
U.S.A. ..	95.7	95.1	—	0.3	3.5	3.3	0.8	1.3	100

In Japan and India a large proportion of short staple cotton is used, and consequently the percentages of cotton consumption in those countries as shown in the table on page 64 are relatively high compared with their percentages of the world's spindles. The extreme opposite case is that of Great Britain, where a very small proportion of short staple cotton is used, and where the percentage of cotton mill consumption is relatively low compared with that of spindles. The decline in Great Britain's percentage of cotton mill consumption in 1925-27 as compared with 1912-13 was no doubt due largely to the depression which prevailed in the American spinning section; but changes as between pre-war and post-war years in the average quality of the yarn produced in particular countries would also affect the percentages, and in Great Britain in particular there has been, as noted earlier, a marked tendency to spin finer yarns. In the case of Japan, the high proportion of cotton consumed as compared with the percentage of the world's spindles is no doubt due not only to the extensive use of short staple cotton as explained above, but also to the relatively long daily hours during which the spinning machinery is running. It has been suggested that the ability of the British industry to compete, especially with Eastern countries, would be increased were greater use made of Indian cotton, which is substantially cheaper than (though inferior to) American cotton. Considerable adjustments of machinery would be necessary to enable Indian cotton to be used extensively.

Summary of position in certain countries.

Notes on the development of the cotton industry in various countries will be found in Appendix 2, page 84. It will be seen that the only other country possessing a cotton industry comparable in size with that of the United Kingdom is the United States of America. In the years immediately preceding the war, when the British industry was prosperous, the amount of piece goods produced in Great Britain must have considerably exceeded the production of the United States, though actual comparable figures of output are not available.* In the post-war years the position has been reversed. For example, in 1923 the production in the United States was 8,264 million square yards as compared with 5,843 million square yards in Great Britain in 1924. It is to be remarked however, that the great bulk of the cotton textile production in the United States is consumed in the home market, and only a small percentage of it (though a substantial amount) is exported. From the point of view of international trade, in fact, the United States was, until the post-war period, considerably less important than some of the other producing countries whose machinery equipment

* The production of Great Britain in 1912 was 8,044 million *linear* yards, while the output of the United States in 1914 was about 6,800 million *square* yards.

was very much smaller. On the average of the four years 1910-13, the value of yarn exported from the United States represented only 0.4 per cent. of the total exports from the principal exporting countries,* but during the three years 1924-26 American exports of yarn steadily increased and in 1926 represented over 5 per cent. of the total from the same group of countries. The corresponding percentages for piece goods (where the increase within the post-war years has not been so marked) are 4.3 for 1910-13 and 7 for 1926.

The cotton industry of Germany lost a substantial quantity of its equipment owing to the transfer of Alsace-Lorraine to France at the end of the war. German exports of yarn in 1910-13 represented in value 5.1 per cent. of the total exports of the principal countries. The percentage fell to 2.3 per cent. in 1924 and 1.9 per cent. in 1925, but recovered to 3.5 per cent. in 1926.† In piece goods also there was reduction in the percentage from 6.5 per cent. before the war to 2.6 per cent. in 1924, 1.9 per cent. in 1925 and 2.7 per cent. in 1926.

The equipment lost by Germany constituted a substantial addition to the resources of the French Cotton industry, and French exports both of yarn and of piece goods showed an absolute and a proportional increase in the three post-war years 1924-26 as compared with 1910-13, though no doubt some part of the increase was due to trade between Alsace-Lorraine and Germany which before the war did not figure in international statistics. French exports of yarn represented in value before the war 2.2 per cent. and in 1926 4.9 per cent. of the total exports from the principal countries; and the corresponding percentages for piece goods were 5.9 per cent. pre-war, and in 1926 6.7 per cent. Yarn exports, however, seriously declined within the period 1924-26; and exports of piece goods, though greater in quantity in 1926 than in 1925, were in both years considerably smaller than in 1924.

Italy has increased the equipment of her cotton industry since pre-war years and shows a considerable increase in exports both of yarn and piece goods, the percentages being for yarn 4.3 per cent. pre-war, and about 5.4 per cent. in 1926, though, as in the case of France, there has been a steady decline in the quantity of exports of yarn from Italy within the three post-war years considered.

* For the purpose of this and the following paragraphs, the "principal exporting countries" are those set out in the table on p. 61, excluding Czechoslovakia and the Netherlands for which comparable pre-war and post-war statistics are not available.

† Imports of yarn into most of the European producing countries are substantial, and in the case of Germany far exceed exports. They are shown in the Table on p. 70, while exports are given on p. 61.

For piece goods the pre-war figure was 4·9 per cent. and that for 1926 (which represented a great decline as compared with 1925, though a larger percentage than for 1924) was about 6·7 per cent.

The other producing countries in Europe which export substantial quantities of cotton yarn or piece goods are Belgium and Switzerland, Czechoslovakia and the Netherlands. Both Belgium and Switzerland exported larger quantities (and a larger proportionate share) of yarn in 1924-26 than in 1910-13, while though their exports of piece goods did not show any very marked increase, their respective shares in the total exports of piece goods from the principal countries were greater than in 1910-13. In the case of Czechoslovakia and the Netherlands, comparable pre-war and post-war statistics are not available. Exports of piece-goods from the Netherlands in the years 1924-26 were comparable in weight with those from Belgium, and Czechoslovakian exports of piece-goods were considerably greater. Exports of yarn from Czechoslovakia substantially exceeded those from Italy in weight, though not in value.

India and Japan were, before the war, by far the largest exporters of yarn outside the United Kingdom, their shares in the total value of exports from the principal countries in 1910-13 being 19·2 and 17·2 per cent., respectively. Japan practically maintained her percentage share on a value basis in the years 1924-26, though the weight of the exports showed a decline. In the case of India, a great reduction in yarn exports has taken place, her percentage share of the total value never rising above 5½ per cent. in the years 1924-26.* As will be seen below, the main reason for the decline was the diminution of demand from China, together with an increase in the internal demand for yarn. On the other hand, both countries have increased their exports of piece goods since pre-war years, the increase in the case of Japan being of remarkable magnitude. India's share of the value of exports of piece goods from the principal countries increased from 1·1 per cent. in 1910-13 to nearly 2½ per cent. in 1926, but the increase in the case of Japan was from about 2 per cent. pre-war to nearly 18 per cent. in 1926; and the quantity of piece goods exported from Japan in the three years 1924, 1925 and 1926, showed a steady and substantial increase. The quantity of piece goods returned in yards increased from an average of 156,000,000 in 1910-13 to 1,348,000,000 in 1926.† At the same time the exports of piece goods from the United Kingdom declined from 6,651,000,000 yards in 1910-13 to 3,923,000,000 yards in 1926. The increase in the Japanese exports, therefore, was equal in linear yardage to a large part of the decline in the exports from the United Kingdom.

* India also imports substantial quantities of yarn, and in some post-war years imports and exports have been about equal.

† Some allowance should probably be made, on the other hand, for the decline (by number) in the export of goods returned by pieces.

Comparative position of British overseas trade.

After the foregoing brief survey of the cotton industry and trade in the principal producing and exporting countries, the discussion of the overseas trade of Great Britain may be resumed. The figures already given show that the British cotton industry, while increasing in equipment and output prior to the war, and also to some extent in equipment (i.e. spindles) since the war, yet has represented a steadily diminishing proportion of the world's cotton industry. Nevertheless in 1926 it accounted for over one-third of the world's spindles, one-quarter of the looms, about two-fifths of the weight and half the value of the yarns exported from the principal countries, and about half the value of the piece goods exported. It was still unsurpassed by any other country in the extent of its equipment and was far ahead of all others in volume and value of exports. At the same time, as explained in an earlier Section of this Chapter, a large portion of the British industry has been suffering since 1921 from serious depression.

From the statistics of cotton mill consumption given in Table 14, on page 154, it appears that the World's mill consumption represented 21,637,000 bales on the average of the four years 1909-10 to 1912-13. In 1923-24 it was some 1,207,000 bales less, but in the three following years it exceeded the pre-war average by 1,657,000 bales, 3,044,000 bales and 4,245,000 bales, respectively. These figures leave no room for doubt that in 1924-25, 1925-26 and 1926-27, the world's mill production of yarns (and presumably also of piece goods) was actually in excess of the pre-war average production. It may be concluded, therefore, that the depression in the British industry is not a reflection of general conditions affecting the cotton industry of the whole world.

It remains to be considered whether it can be related to a general depression of international trade in cotton products. For this purpose reference must be made to the tables on p. 61, showing exports of yarn and piece goods from the principal exporting countries.

Yarns.

As regards yarns, the table shows that there has been a material contraction in the volume of world trade in comparison with the pre-war volume. The exports of all the countries for which comparable figures are given (i.e. omitting Czechoslovakia) averaged 287,500 metric tons in 1910-13 and 200,700 metric tons in 1924-26, a loss of 30 per cent. As reason has been found to believe that the world production of yarns has increased since before the war, it is clear that foreign countries are on the whole producing and consuming their own yarn to a greater extent than was formerly the case. This applies strongly to Japan and British India, where the growth of the

weaving industry has absorbed an increasing amount of home produced yarn and has caused a heavy diminution of exports, notwithstanding a simultaneous development of spinning in those countries. It is also applicable to some countries which formerly imported yarn. China in particular, which imported enormous quantities from Japan and India, has greatly reduced her purchases. Whereas on the average of the four years immediately preceding the war Japan and India exported to China and Hong Kong some 136,000 metric tons of yarns, the quantity was reduced to about 36,000 tons in 1924, 40,000 tons in 1925 and 27,000 tons in 1926. It would seem that China is approaching self sufficiency as a result of the enormous development of modern spinning plant which has taken place in recent years. In some other countries, tariff influences have been at work tending to cut down imports. Thus in the United States it is no doubt owing largely to high tariff rates that imports of yarns (never very great in quantity) have been reduced by over half, from 3,460 metric tons on the average of the four pre-war years to 1,670 metric tons on the average of 1924-26. In still other countries it may be that the diminished import of yarn is connected with a reduction in the aggregate amount of yarn required, and no doubt this holds in part of Europe where the cotton industry and trade are suffering from depression. It is a significant fact, however, that the total yarn import trade of Western Europe at any rate is well maintained :-

Imports of Yarns into certain European Countries.
(In Metric tons.)

		1910-13 Average.	1924.	1925.	1926.
Into United Kingdom	..	4,104	3,626	3,837	3,581
France ..	..	3,270	4,179	4,035	9,246
Germany ..	..	27,998	44,747	61,276	25,749
Belgium ..	..	3,031	2,634	2,926	3,235
Italy ..	..	633	851	1,562	1,223
Switzerland ..	..	3,322	4,598	3,113	2,802
Total	.. ..	42,358	60,635	76,749	45,836

Changes of frontiers—and especially the transfer of Alsace Lorraine from Germany to France—affect the full comparability of the figures. Their general effect, however, is unmistakable. The European international trade in yarns continues in probably at least the pre-war volume. The European trade is to an important extent in special kinds, colours, or qualities of yarn; and in view of the considerable amount of specialisation which exists in the manufacturing industries of most European countries, it is practically impossible under normal conditions for them to do without import yarns.

The diminishing part of the international trade in yarns is mainly outside Europe, and it centres primarily in those qualities which can be spun by countries which have recently developed a cotton mill industry—that is to say, the coarser “counts.” Although there is evidence that progress has been made by some of the newer cotton mill countries (e.g. India and Japan) in the direction of spinning finer “counts,” the improvement has not gone far, and these countries are not in a position to replace the finer “counts” which are produced to a great extent in Lancashire.

If reference be again made to the yarn export table on p. 61, it will be seen that whereas the aggregate volume of trade on the average of the years 1924–26 (omitting Czechoslovakia) showed a decline of 30 per cent. as compared with that for 1910–13, the reduction in the weight of British exports was considerably smaller, viz. 20 per cent.; or, in other words, Great Britain is carrying on an actually larger proportion of the trade than was the case before the war. On the basis of tonnage the British proportion increased from 34 per cent. in 1910–13 to 39 per cent. on the average of the years 1924–26. On the basis of values British exports represent a substantially larger proportion of the aggregate trade than they do on the basis of tonnage, because British yarns are on the whole of finer quality. In 1910–13 British exports of yarns represented in value 48 per cent. of the total exports of yarn, and this had increased to nearly 51 per cent., taking the average of the years 1924–26.

Although British exports of yarns have on the whole maintained their place in the diminished total international trade, in particular instances they appear to have lost ground to competitors. Information will be found in Appendix 2, p. 84, as to the destinations of yarns exported from some of the principal countries, and as to the competitive position in some important markets. British exports of yarns are analysed according to destinations in the Table on p. 54, and it will be seen that the principal markets for British yarns are Europe and British India. On the whole, the trade with European countries has been well maintained, but that with India has declined heavily. The figures given on p. 101 show that total imports of yarn into India have been somewhat larger in recent post-war years than in the years immediately preceding the war. Before the war some 88.1 per cent. of the weight of yarns imported came from Great Britain and 1.4 per cent. from Japan. On the average of the years 1924–25 to 1926–27, however, only 36.2 per cent. came from Great Britain and as much as 58.9 per cent. from Japan. Again, it is likely that the increase in the United States exports of yarns, from about 1,000 metric tons before the war to some 10,900 metric tons in 1926, may have been effected to some extent at the expense of British trade. American yarns are exported almost entirely to South America and Canada, countries to which British shipments have markedly declined.

Before leaving the question of yarn exports, it should be pointed out that the amount of yarn exported as such from the United Kingdom represents only about one-eighth of the total weight of yarn produced. Hence the reduction in exports of yarns which has occurred, while by no means insignificant, represents only a small fraction of the total output. Figures given above (p. 51) indicate that if yarn exported in the form of piece goods is taken into account, over two-thirds of the total is exported. The fortunes of the spinning section of the industry depend mainly therefore on the export trade in piece goods, the subject which will now be discussed.

Piece goods.

Owing to the lack of uniformity in the units used by different countries for recording the volume of their overseas trade in cotton piece goods, an exact comparison of the total volume of the pre-war and post-war international trade cannot be made. The available data suggest, however, that the volume of world trade in 1924-26 was somewhat less than in 1910-13. Any such diminution is undoubtedly more than accounted for by the decline in the volume of British exports, which fell from about 6,651 million yards in 1910-13 to 4,382 million yards in 1924-26, i.e. by about 34 per cent. In considering figures of quantity, however, account must be taken of the fact that the trade in superior qualities of goods has been better maintained than the trade in the inferior qualities. On the basis of values British exports of piece goods represented in 1910-13 some 70·7 per cent of the total value of piece goods exported from the countries for which comparable figures are given in the Table on page 61 (i.e. omitting Netherlands and Czechoslovakia). In 1924 and 1925 the corresponding percentage was 56·6 and in 1926 51·4.

It appears that the falling-off in British trade in piece goods may be connected in part with the decline in the total international trade in piece goods, but that ground has also been lost to foreign competitors. The circumstances which have contributed to diminish the aggregate international trade in piece goods are largely similar to those which contributed to diminish the trade in yarns. The aggregate production and consumption of cotton goods in the world is probably greater than it was before the war, but these goods are being produced more largely in consuming countries. Special reference should here be made to the case of India*—the largest consumer of imported cotton goods in the world. Indian dependence upon imported goods has been greatly reduced since the war as a result of the development of local manufacturing. It is estimated that the quantity of piece goods available annually for consumption in India averaged before the war about 4,600 million yards. The average for 1924-25 to 1926-27 was about the same. But annual

* See Appendix 2, p. 100.

production in India in the later period was about 1,100 million yards more than in the earlier period, and retained imports were reduced correspondingly. This, alone, would probably account for any reduction in the aggregate volume of international trade in piece goods. Moreover, the reduction in the Indian import trade affects primarily the Lancashire cotton industry, in view of the predominant part which that industry played in the supplying of piece goods to India before the war.

The tendency to substitute home-produced for imported goods has made itself felt in many other countries, e.g. Canada, Brazil, and some European countries.

The development of cotton manufacturing industries abroad has resulted also in increased competition with British goods in the international trade which remains.* Specially prominent in this connection is Japan. The Japanese export trade in piece goods had already begun to grow rapidly before the war, but the war, by making European goods unobtainable in distant markets, gave an immense impetus to the Japanese export trade and to the Japanese cotton industry. Post-war experience, moreover, has shown that the Japanese industry is based upon solid foundations, and that it is not merely able to hold much of the trade which it gained during the war, but is in a position to push its way still further into many important markets. Mass distribution of standardised goods is said to be a feature of the trade. The considerable development of the finishing industries in Japan has enabled her to export not merely grey cloth, but also large quantities of finished cloth. Japanese competition has become formidable in China, India, and other great markets of the Far East ; and Japanese goods have begun to appear in East and South Africa, in the Middle and Near East, in South America, and to a small extent in Australasia. The total imports of grey cloth into India in 1910-11 to 1913-14 (average) were 1,355 million yards of which Japan supplied less than one four-hundredth part. In 1926-27, the total was 748 millions and Japan's share over one-fifth. Between 1913 and 1925, the Japanese share in imports into China is estimated to have increased from about one-fourth to three-fourths.

In comparison with the Japanese exports the export trade of India is insignificant. The Indian mills are mainly occupied in producing for the home market. Nevertheless, exports have considerably increased since before the war. They go largely to Ceylon and the Straits Settlements, the Middle East and East Africa.

* The exports of British piece goods are analysed by destinations in the Table on pp. 54-7 ; and Appendix 2, p. 84, contains information as to exports of piece goods (by destinations) from some of the principal producing countries and as to the competitive position in a number of important markets.

China has not yet begun to export to any considerable extent, and in fact the development of the Chinese manufacturing industry only slightly restricted the demand for imported piece goods. But the potentialities of China in connection with cotton manufacture are enormous. The industry has grown rapidly, and, while the disturbed state of the country must hamper progress, it may well be that China will become an important competitor in the world's cotton trade of the future.

Other countries whose competition has increased in a marked degree since before the war include Italy and the United States. The Italian cotton industry had been growing in importance for many years before the war, and it has made further progress since the close of the war. The finishing industries have attained a considerable development, and Italian exports comprise large quantities of dyed, coloured and printed goods. The principal Italian markets are in the Near East and in South America. There, and in some other markets, British exporters have experienced severe competition from the Italian trade.

American cotton exports consist largely of standardised products sold in the various markets by pattern cards. They are sent predominantly to Canada, Mexico, Cuba and the West Indies, Central and South America and the Philippine Islands, and in practically all these markets American trade has increased—to a considerable extent, it would seem, at the expense of British trade. Canada obtained before the war nearly four-fifths in quantity of her imported cotton piece goods from the United Kingdom, and the remainder mainly from the United States. On the average of the years 1924–25 to 1926–27 the British share has been reduced to just over half, and the United States share has increased to nearly half. In Mexico and some South American markets also a marked shifting in the proportion in favour of American trade can be traced. American goods also appear to have displaced British imports to some extent in South Africa, and to have gained a small footing in Australia and New Zealand.

From what has been said it is clear that British export trade has suffered both from the growth of manufacture in consuming countries, which has reduced the aggregate volume of international trade, and from the increased severity of competition of other exporting countries in many markets—largely in the Far East but to an important extent also in the Near East, in East and South Africa, in Canada, and in Central and South America. There are certain important markets, on the other hand, in which British piece-goods have substantially held their ground relatively to the trade of other exporting countries.

One of these markets is the United States itself, and here British trade has not merely held its relative place but has expanded

absolutely—notwithstanding exceedingly high rates of duty levied upon imports in the last few years. The explanation is that the goods exported to the United States are of very high quality, such as are not produced there to any great extent, and that the abounding prosperity of America since the war has resulted in an increased demand which the tariff has failed to check.

In Brazil, the high tariff also practically restricts imports to goods of superior quality, and it is significant that in the imports of that country British trade has fully maintained its relative position, though there has been some falling off in the absolute volume. Both in the United States and Brazil, British goods represent the bulk (75 to 80 per cent. in quantity) of the piece goods imported, a fact which may be regarded as indicating the position of predominance which the British cotton industry has attained and maintains as regards the finest qualities of piece goods. This may also be observed in the Australian and New Zealand markets where the demand is also predominantly for the better qualities of goods. The imperial connexion and preferential tariff rates doubtless play a part, and British exports of piece goods to Australasia have hitherto, it would appear, experienced no serious competition from other countries.

The fact is that almost everywhere Lancashire is able to hold her own in free competition in the higher and highest qualities of cloth. Such competition as there is comes mainly from European countries. As regards coarse cloths, events have shown that Lancashire has lost much ground in competition with the East, and it is probably not to be expected that she will be able to regain much (if any) of the trade which she has lost in the commonest qualities, or even perhaps to retain all the trade which she still holds. The East has some important advantages both in the cost of raw material and in other ways ; and in the market for common qualities price is all important. Between the fine and the common qualities there is a wide range of goods ; and the future of Lancashire will depend to a great extent on her ability to retain a large share of this trade. She has on her side substantial advantages, to some of which reference has already been made ; but international competition for the class of trade in question is keen, and in some of the competing countries both the organisation and the methods of the cotton industry differ substantially or even fundamentally from those in this country. If Lancashire is to succeed, it will be necessary for her to see to it that her methods and organisation are capable of adjustment if required to meet changed and changing conditions, and are maintained at the highest pitch of efficiency. Only in this way will it be possible for her to place her products on the world's markets at prices and under conditions which will enable them to hold their own.

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APPENDIX 1.

The Raw Cotton Supply.

The Lancashire cotton industry is entirely dependent upon imported raw material, and it is important to consider its requirements in relation to the available supplies. The quantities of cotton imported into and retained in the United Kingdom from the principal sources were as follows in 1910-13 and in the years since 1920 :—

		<i>Retained Imports in Bales of 500 lb.</i>			
		1910-13 av.	1920-24 av.	1925.	1926.
From					
United States	..	3,180,312	1,804,650	2,393,197	2,080,012
Egypt	..	579,025	494,160	491,629	503,956
British India	..	83,560	119,074	192,122	115,055
Brazil	..	60,683	42,012	74,068	64,292
Peru	..	52,898	138,882	161,417	169,982
Other Foreign Countries		33,489	71,501	133,001	148,462
Other British Countries		25,642	79,967	193,647	226,596
Total	..	<u>4,015,609</u>	<u>2,750,246</u>	<u>3,639,081</u>	<u>3,308,355</u>

In 1927 retained imports amounted to 3,002,932 bales of 500 lb.

Before the war Lancashire was dependent upon the United States for fully three quarters of the quantity of raw cotton consumed. Since the war the proportion has been slightly lower, but it is still nearly two-thirds of the whole. After the United States, Egypt figures as the most important source of supply, and her importance is in fact somewhat greater than a comparison of mere quantities would suggest, as much of the Egyptian cotton is of high quality suitable for fine spinning. Imports from other sources were insignificant before the war, representing only about 6 per cent. of the total quantity of cotton retained ; but these other sources of supply have expanded both relatively and absolutely since the war, and in 1926 they accounted between them for more than 20 per cent. of the aggregate quantity of raw cotton retained.

Disadvantages of undue dependence on one source of supply.

The disadvantages arising from dependence on the American cotton crop had frequently been brought home to the industry in the past, and the necessity for developing alternative sources of supply—both of the qualities produced in America and if possible also of those produced in Egypt—was increasingly apparent.

As regards American cotton, important factors were the increasing difficulties in securing a further expansion of production, owing to the labour problem in the cotton growing States and to the

prevalence of an insect pest known as the boll weevil ; and also the growth of American consumption, which tended to restrict the export surplus. As regards Egyptian cotton, the limited area available, and the tendency to a diminished yield per acre, were important considerations. The course of American cotton production, together with the extent to which the crop was exported or retained in the United States, and also the course of Egyptian cotton production, are shown in the following table.

(Thousands of Bales of 500 lb.)

Year.	United States.			Egyptian Crop.
	Total Crop (inc. linters).	Exports*.	Retained in U.S.A.	
1880-4 average ..	5,865	3,987	1,878	555
1885-9 ..	6,793	4,536	2,257	585
1890-4 ..	8,324	5,700	2,624	952
1895-9 ..	9,509	6,498	3,011	1,192
1900-4 ..	10,899	7,176	3,723	1,219
1905-9 ..	11,936	7,792	4,144	1,276
1910-3 ..	14,341	9,390	4,951	1,511
1920-4 ..	11,587	6,385	5,202	1,236
1925 ..	17,219	8,377	8,842	1,593
1926 ..	19,137	11,587	7,550	1,727
1927 ..	13,789†	(a)	(a)	1,280†

* For 12 months ending 31st July following.

† Preliminary figure (a) not yet available.

Up to the war the production of cotton in America, the amount exported and the amount retained were generally increasing. On the whole, the proportion of the crop retained was fairly steady at about one-third of the whole. The crops in 1920-24 averaged 19 per cent. less than in 1910-13, but the amount retained in the United States was 5 per cent. greater, while the amount exported was 32 per cent. less. In 1925 and 1926 the American crops were exceptionally large and the amounts exported showed a substantial increase.

The Egyptian crop expanded very greatly between 1885-89 and 1900-04, and there was a further increase between the latter period and 1910-13. The post-war figures show little further advance.

Course of Cotton Prices.

Great as was the increase in the American and Egyptian crops before the war, it was not greater than the increase in demand, and

in fact the price of raw cotton from the middle 1890's was rising relatively to the general level of wholesale prices, as is indicated in the following statement,† which covers also the post-war period :—

Average prices of 1910-13=100.

			Board of Trade Index No. of Wholesale Prices of Commodities Generally.	Prices of Raw Cotton.	
				Middling American.	Good Fair Egyptian.
1890-4	..	..	89·7	65·5	52·8
1895-9	..	..	80·8	59·1	50·5
1900-4	..	..	86·8	76·6	70·6
1905-9	..	..	91·0	83·3	84·1
1910-3	..	..	100·0	100·0	100·0
1920-4	..	..	204·8	213·8	219·3*
1925	..	..	164·8	177·5	224·0*
1926	..	..	153·4	128·3	127·0*
1927	..	..	146·5	131·4	129·9*

* Fully good fair Sakellaridis.

The price of raw cotton, which had been rising before the war relatively to general wholesale prices, rose still further relatively in 1920-24. From 1925 onwards, however, there was a movement in the opposite direction, promoted by the exceptional magnitude of the American crop; and the average price index of American, as also of Egyptian, cotton stood in 1926 and 1927 below the general index number.

Comparing the course of prices of American with that of Egyptian cotton, it may be noted that the broad tendency since the middle 1890's has been for the price of the latter to rise relatively to the price of the former. From this point of view it appears that the necessity for increasing the output of the higher qualities of cotton which are produced in Egypt is even more pressing than the necessity for expanding supplies of those qualities which are produced in America.

The British Cotton Growing Association.

The signs of impending shortage were not unheeded by Lancashire, and as long ago as 1902 the British Cotton Growing Association was formed with the object of extending the cultivation of cotton in the British Empire. The Association was incorporated by Royal Charter in 1904. It has an authorised capital of £500,000, of which some £473,000 has been subscribed, but the Association does not aim at making a profit. It has been supported both by employers

† See also table on page 137 showing average prices in each quarter of the years 1924 to 1927 as compared with the price in 1913.

and operatives in the cotton industry, and the Council includes representatives of the principal trade unions in the industry. Its activities cannot here be described in detail, but they have manifested themselves largely in the following directions :—

- (a) Establishment of ginneries ;
- (b) Advances to growers, guaranteeing fixed prices to growers and marketing cotton ;
- (c) Distribution of seed ;
- (d) Co-operation with other bodies, such as the Empire Cotton Growing Corporation (as to which particulars follow) ;
- (e) Investigation of the possibilities of various cotton areas and the publication of reports thereon.

Broadly, the Association has done very valuable work in stimulating the cultivation of cotton in many parts of the Empire, in discovering the areas suitable for cotton growing and (what is almost equally important) the areas not suitable, and in selecting the best varieties to be grown in each district.

The Empire Cotton Growing Corporation.

A further important step was taken after the war in the formation of the Empire Cotton Growing Corporation. The Board of Trade Departmental Committee appointed in 1916 to consider the position of the Textile Trades after the war emphatically advised the encouragement of cotton growing in new areas, and recommended* that "in order to further such efforts a standing Advisory Committee should be appointed . . . to investigate in all its bearings the question of increasing the supply of cotton within the British Empire, to act as a clearing house for information, and generally to assist and advise the Governments concerned in the development of their cotton growing resources". A committee was set up, and from it was evolved the Empire Cotton Growing Corporation, which was incorporated under Royal Charter in November, 1921, and endowed with a fund of nearly £1,000,000, being half the Government's share of the surplus from the war-time control of Egyptian cotton. Under the Cotton Industry Act, 1923, the Corporation was provided with an income by the imposition for five years of a levy of 6d. on each bale used in this country, the levy being collected through the Liverpool and Manchester Cotton Associations. The Corporation is managed by a Committee comprising representatives of each section of the cotton trade and of the Government. The Corporation has paid considerable attention to the promotion of research into such questions as the varieties of cotton most suitable for each district, the possibility of evolving new varieties, and the methods of counter-acting insect pests. It has also, largely by means of post graduate studentships, promoted the training of men to act as agricultural officers in the new cotton growing countries. The improvement of

* Report of the Committee on the Textile Trades after the war. (Cd. 9070.)

road and rail transport in the cotton growing countries and the initiation of regular shipping services from the ports have also claimed the attention of the Corporation, as the existence of adequate transport facilities is a pre-requisite to the expansion of cotton cultivation.

Increase of Empire Cotton Crop.

The results of the efforts which have been made to increase cotton production in the Empire are not yet fully reflected in the crop statistics but the figures on page 83, taken from the Annual Reports of the British Cotton Growing Association, sufficiently indicate that the rate of expansion in the newer cotton growing areas is very considerable.

The aggregate production of these countries does not yet represent a substantial factor in the world's cotton supply, but if the recent rate of progress is continued it will do so before many years are past.* Development has been most marked in Northern Nigeria, Uganda, Tanganyika and the Sudan. The cotton crop of the last named country is of special importance as it is of the long-stapled Egyptian variety, suitable for fine spinning. The other territories included above produce for the most part cotton which can be used in substitution for American medium staple cotton, but in the West Indies there is produced some of the finest quality of long-stapled cotton, known as "Sea Island" cotton.

The table on p. 83 takes no account of India, one of the oldest cotton growing countries in the world, which ranks second only to the United States as regards the quantity of cotton produced. Indian cotton is for the most part of short staple, suitable for the production of coarse yarns and fabrics only, and it frequently contains much dirt. It has, therefore, been little used in Lancashire, and, apart from supplying the requirements of the Indian cotton industry, it is exported mainly to Japan and the continent of Europe. The growing of better cotton from American seed is being fostered by the Indian Government and other interests (notably the Indian Cotton Committee) in conjunction with the Empire Cotton Growing Corporation, and India may be expected to produce in the future an increasing proportion of the better qualities of cotton. The main difficulty is the unprogressive methods of the native cultivators.

It should be added that the rate of expansion of the Empire Cotton crop is bound to be affected by the market price of the material. A high level of cotton prices relatively to the general level of prices would accelerate, while on the contrary a low level of prices would retard development. Much also depends upon the progress of transport and other works in the new cotton growing areas. In this connection reference may be made to a memorandum

* As mentioned on p. 18, a "futures" contract for dealings in "Empire and Miscellaneous" cotton was established on the Liverpool Cotton Exchange in 1925.

on Transport Development and Cotton Growing in East Africa (Cmd. 2463.) submitted by the Committee on Industry and Trade to the Prime Minister in 1925.

World's Cotton Production and Consumption.

Of the cotton crops of other countries outside the British Empire it is not necessary to write in detail, but it is convenient here to present a general summary of the world's cotton crops indicating the changes since before the war.

*Estimate of World's Cotton Crops.**
(Thousands of bales of approximately 500 lb.)

				1905-6 to 1909-10. Average	1910-1 to 1913-4. Average	1920-1 to 1924-5. Average	1925-6.	1926-7
America	..	..	..	11,936	14,341	11,587	17,219	19,137
India	..	..	..	3,181	3,370	3,905	5,000	4,002
Egypt	..	..	..	1,276	1,511	1,236	1,593	1,727
Russia	..	..	..	675	906	182	715	802
China..	..	..	..	978	2,436	1,688	1,795	1,533
Other Countries	..	..	..	967	1,118	1,605	2,148	2,196
Total	..	..	..	19,013	23,682	20,203	28,470	29,397

* Based on Statistics published in the Empire Cotton Growing Review.

The world's cotton crop was increasing rapidly before the war. During and for a time after the war further expansion was checked, and the average crop in 1920-21 to 1924-25 was nearly 15 per cent. below the average of 1910-11 to 1913-14. In 1925-26 and in 1926-27 the world's cotton crop substantially exceeded the pre-war level, mainly owing to exceptional crops in the United States.

In concluding this Appendix reference may be made to Tables 14 and 15 on pp. 154-5 which show the estimated consumption of the principal kinds of raw cotton by the spinning mills of various countries. The statistics are in terms of "running bales" i.e., bales of different weights, but indicate broadly the distribution of the world's cotton crop. In considering the statistics, it should be borne in mind that the cotton consumption of different countries bears no uniform relation to the extent of the spinning industries of the countries, since a country which spins coarse counts requires a greater weight of cotton in proportion to spindleage than a country which spins finer counts.

American cotton is the principal raw material of the United States industry, and also of the cotton industries of European countries, except Russia. Japan also consumes a substantial quantity—much more than before the war. East Indian cotton is consumed mainly in India and Japan, but some also is consumed in Europe—principally on the Continent. Of Egyptian cotton Great Britain is the largest consumer—and this applies particularly to the finer qualities. The United States is also a large consumer, and substantial quantities are used by Continental countries.

RAW COTTON.

Approximate estimate of cotton grown in the newer areas.
(Bales of 500 lb.)

	1914.	1920.	1921.	1922.	1923.	1924.	1925.	1926.
Gold Coast ..	80	—	—	—	800	2,400	480	80
Nigeria—Southern ..	11,000	8,560	15,600	3,680	4,000	6,080	8,240	7,520
Northern ..	800	4,400	9,600	7,200	11,120	13,120	23,440	31,600
Total, British West Africa ..	11,880	12,960	25,200	10,880	15,920	21,600	32,160	39,200
Uganda ..	33,600	41,600	65,040	32,000	68,000	102,880	156,800 (a) (b)	144,720 (a) (b)
Kenya ..	400	80	400	320	960	1,040	1,840	240 (a)
Tanganyika ..	—	—	6,080	5,740	9,120	14,000	20,160 (a)	21,920 (a)
Nyasaland and Rhodesia ..	6,400	2,800	3,680	4,560	5,200	6,960	10,480	11,920
Union of South Africa ..	276	2,000	2,000	2,240	4,800	6,960	15,040	16,320
Total, E.C. and S. Africa ..	40,676	46,480	77,200	44,860	88,080	131,840	204,320	195,120
Sudan ..	8,000	17,600	22,160	19,440	22,400	36,880	34,160	97,680
West Indies ..	4,800	3,600	3,600	3,200	4,000	4,000	3,920 (a)	4,640 (a)
Australia ..	—	—	800	2,640	7,200	8,400	12,000 (a)	7,200 (a)
Mesopotamia ..	—	—	—	240	1,200	2,000	2,000	2,800
Sundries ..	—	4,000	3,200	2,960	4,800	4,800	4,800	4,800
Total ..	65,356	84,640	132,160	84,220	143,600	209,520	293,360	351,440

(a) Exports.

(b) Including "carry over" from previous season.

APPENDIX 2.

Notes on the Cotton Industry and Trade in Other Countries.

The notes contained in this Appendix deal first with a number of producing countries, namely, United States, Germany, France, Italy, Belgium, Switzerland, Czechoslovakia, the Netherlands, Poland, India, Japan and China. These countries, with the exception of China, are also the principal exporting countries as regards cotton yarn and piece goods. Some of them (notably India, China and, on a much smaller scale, the United States) constitute important markets for imported piece goods; and many of them, including not only China and India, but also several of the European countries mentioned, import large quantities of yarn. The Appendix contains information as to imports of cloth and yarn into such producing countries, and it also contains further notes on a number of other countries (in Asia, Africa, Australasia and North and South America) which are important primarily as markets for piece goods. A list of all the countries dealt with in this Appendix is given below.

In addition to the information contained in this Appendix regarding the cotton industry and trade in other countries, reference may also be made to the paragraphs on pages 11-14, dealing with the general development of the cotton industry throughout the World in earlier years, to the Tables Nos. 9 to 17 in Appendix 6 showing for various countries the amount of cotton machinery, the cotton mill consumption, and the exports of yarn and piece goods, as well as to the Tables and information contained in Section V of the Chapter (p. 59), where the competitive position of the British industry and trade is reviewed in relation to that of other countries.

List of Countries dealt with.

	Page.		Page.
Argentina	120	Italy	90
Australia	116	Japan	104
Belgium	92	Kenya	113
Brazil	119	Mexico	118
Canada	117	Netherlands	95
Ceylon	111	Netherlands East Indies	109
China	107	New Zealand	117
Czechoslovakia	94	Nigeria	115
Egypt	111	Poland	97
France	88	Straits Settlements	110
Germany	86	Switzerland	93
Gold Coast	114	Union of South Africa	115
India	99	United States	85

United States.

Apart from being the principal producer of raw cotton, America has a large manufacturing industry, which ranks second only in the amount of its equipment to that of Great Britain ; and she is a large consumer of manufactured goods. The manufacturing industry has increased substantially in recent years and has shifted increasingly from the older textile districts of New England to the cotton growing states, where it has advantages both as regards access to raw materials and even more as regards cheap labour. The United States possesses between a fifth and a quarter of the world's spindles and looms, and uses rather more than a quarter of the cotton consumed in the world's cotton mills. The production of woven cotton goods as ascertained at the last five Censuses of Manufactures was as follows :—

1909	..	..	6,267,561,000	sq. yards
1914	..	..	6,813,541,000	„ „
1919	..	..	6,317,398,000	„ „
1921	..	..	6,703,836,000	„ „
1923	..	..	8,264,220,000	„ „

The bulk of this production is consumed in the United States, but the export trade is substantial, and it exceeds the import trade in amount. The amount of exports and imports of cotton piece goods in certain pre-war and post-war years, so far as stated in square yardage, is shown by the following figures :—

Imports of Piece Goods into and exports of Piece Goods from the United States, so far as recorded in square yardage.

(In Thousands of Square yards.)

			1909-10 to 1912-3 Average.	1924.	1925.	1926.
<i>Imports.</i>	<i>Total</i>	..	55,661	177,386	109,249	60,680
	From—					
	United Kingdom		43,741	150,651	91,519	44,223
	Germany ..	..	3,163	1,495	2,125	1,590
	France ..	..	4,511	6,188	2,483	2,226
	Switzerland ..	..	1,928	5,200	2,520	5,098
	Japan ..	..	1,423	9,228	5,373	2,267
<i>Exports.</i>	<i>Total</i>	..	394,502*	478,729	544,138	514,089
	To—					
	Canada	..	16,510	33,625	38,333	46,566
	Mexico	..	2,064	18,073	21,217	14,436
	Cuba ..	..	21,443	81,069	66,532	70,078
	Haiti ..	..	20,990	23,191	31,121	17,517

* Exports in linear yardage in 1909-10 to 1912-13.

		1909-10 to 1912-13. Average.	1924.	1925.	1926.
<i>Exports—contd.</i>					
To—					
Guatemala	..	4,440	11,709	8,269	11,434
Salvador	..	8,837	13,637	16,310	11,131
Dominican					
Republic	..	11,477	17,377	17,840	13,814
Colombia	..	20,259	32,325	43,948	33,756
Chile	..	10,737	22,696	23,540	24,673
Argentina	..	1,639	21,473	22,932	19,305
Philippines	..	61,446	67,561	79,787	101,101
China	..	91,164	1,552	7,437	1,424
British South					
Africa	..	275	7,796	12,174	14,025

The post-war figures exclude some piece goods recorded since, but not before, the war in weight.

Assuming that linear yardage does not vary greatly from square yardage in the case of exports, it is clear that both imports and exports are greater than they were on the average of four pre-war years. Great Britain appears to have fully maintained her predominance in the import trade. In the export trade the main features are the expansion in trade with American countries, North, Central and South, and the dwindling of the China trade. Exports consist of more or less standardised products similar to those produced for the internal market. The Americans print vast quantities of cloth from a limited number of designs, though with a variety of colourings, and assortments are shipped to the various markets, where they are sold by pattern cards. It is obvious that the trade is on a completely different basis from the British export trade, with its careful attention to the individual requirements of the purchasers.

The American import trade in cotton cloth is a high-grade trade, as is shown by the greater average value per yard of imports than of exports. It meets requirements in the matter of taste and quality for which the American industry with its system of mass production makes little attempt to cater. The great prosperity of the United States has resulted in an increased demand for such goods, which the high post-war tariff has failed to check.

Germany.

The German cotton industry is somewhat widely scattered, the principal districts in which the industry is carried on being South Germany, Rhineland and Westphalia, Saxony and Silesia. Through the transfer of Alsace-Lorraine to France at the end of the War, Germany lost about 1½ million spindles and 38,000 looms. She

possessed about 10·9 million spinning spindles in 1927, as compared with 11·4 million in 1914. The number of looms is estimated at about 220,000, excluding 20,000 or 30,000 devoted to the manufacture sometimes of cotton cloth and sometimes of woollens or linen or half woollen or half linen*. Spinning and weaving are frequently combined in one business, and to an increasing extent firms do their own finishing, but the greater part of the cloth manufactured in the weaving sheds is still sold in the grey state. For many years past there has been a tendency to spin finer yarns, and some fine Egyptian yarns are produced. Large quantities of fine yarns, together with lower counts, are, however, imported, and this trade may be illustrated by the following table :—

Imports of Cotton Yarns into Germany.
(In Metric tons.)

		1910-13. Average.	1924.	1925.	1926.
From United Kingdom	..	22,482	17,302	23,874	13,865
Switzerland	..	1,330	4,389	6,241	3,276
Alsace-Lorraine	..	—	5,677	936	248
Czechoslovakia	..	4,186 {	9,985	15,463	5,145
Other Countries	..		7,394	14,762	3,215
Total	.. ..	27,998	44,747	61,276	25,749

In 1910-13 imports averaged 27,998 metric tons per annum, and of this quantity no less than 80·3 per cent. was imported from the United Kingdom. In only one of the three post-war years shown, namely, 1925, did the total imports of yarns from the United Kingdom exceed the pre-war average, while the aggregate imports of yarns (even if imports from Alsace-Lorraine be deducted) fell short of the pre-war average in one year only, namely, 1926. The percentage of British yarns to total imports fell to 38·7 in 1924, 39·0 in 1925 and 53·8 in 1926. The figures suggest that Great Britain has had to meet keener competition from other countries (including Switzerland and Czechoslovakia) than was the case before the war. It should be added that imports from Great Britain include a relatively greater proportion of fine yarns than do imports from other countries, as is proved by their higher average value per ton. In 1910-13 the average value per ton was 4,070 M. for British yarns, compared with 2,240 M. for foreign yarns. In 1924, the figures were 7,760 M. for British and 5,120 for other, and in 1925 8,800 for British and 4,330 for other. Measured in values, imports of yarns from Great Britain represented 88·1 per cent. of aggregate imports of yarns in 1910-13, 48·9 per cent. in 1924 and 56·5 per cent. in 1925. The corresponding percentage for 1926 is 70·8.

* Manchester Guardian Commercial, 10th December, 1925. European Textiles Supplement.

The German export trade in yarns is of relatively little importance. The extent and direction of the export trade in piece goods may be illustrated by the following table :—

Exports of Cotton Piece Goods from Germany.
(In Metric tons.)

		1910-13 Average.	1924.	1925.	1926.
To United Kingdom ..	..	5,888	1,044	1,157	2,027
Netherlands ..	..	2,051	1,528	1,285	1,033
Austria-Hungary ..	..	585	1,583*	780*	520*
Turkey ..	..	2,260	339	592	343
United States ..	..	1,575	2,235	2,495	1,571
Argentina ..	..	3,142	945	1,129	1,417
Brazil ..	..	1,802	76	174	244
British India ..	..	3,746	1,168	632	1,572
Other countries ..	..	18,807	11,515	11,559	11,110
Total ..	..	39,856	20,433	19,803	19,837

* Austria.

The German export trade in piece goods has been reduced in comparison with the pre-war trade by about half, but part of this is no doubt attributable to the loss of Alsace-Lorraine.

Imports of piece goods into Germany averaged 8,892 metric tons in 1910-13, 25,714 tons in 1924, 25,261 tons in 1925 and 8,651 tons in 1926. The British Trade Accounts show substantial exports to Germany amounting to 5,250 tons in 1924, 10,780 tons in 1925 and 4,610 tons in 1926.

France.

Cotton manufacturing has long been carried on in France. The recovery of Alsace-Lorraine at the end of the War resulted in an important addition to the equipment of the French cotton industry, since Alsace contains some 1,730,000 spinning spindles, 147,000 doubling spindles and nearly 38,000 looms.* The equipment in some of the other areas was extensively damaged during the War, but the industry has been completely restored. Including Alsace, the French cotton industry is said to comprise some $9\frac{1}{2}$ million spinning spindles, $1\frac{1}{2}$ million doubling spindles, 182,000 power looms and 8,000 hand looms, these figures representing a substantial increase in equipment as compared with 1914. The industry is located in five principal districts, viz., Normandy, the Northern Textile area of Roubaix-Tourcoing and Lille, the Vosges, Alsace,

* Manchester Guardian Commercial, 10th December, 1925. European Textiles Supplement.

and the neighbourhood of Roanne in Central France. Each district specialises to a great extent on different types of products. Generally, in spinning, the production of coarse and medium counts predominates, but in Lille and in Alsace the spinning of fine and very fine counts together with the manufacture of sewing cotton is an important industry.

As a result of the inclusion of Alsace-Lorraine, the statistics of French imports and exports in post-war years are not comparable with the pre-war figures, and this must be borne in mind in considering the particulars given below.

France imports considerable quantities of yarns, mainly from the United Kingdom. Since the war these imports have been increased, as is shown by the following figures :—

Imports of Cotton Yarn into France.

Yarns recorded by weight.				Yarns recorded by length.		
	Total Imports Metric Tons.	Imports from U.K. Metric Tons.	Per cent. from U.K.	Total Imports Million Metres.	Imports from U.K. Million Metres.	Per cent. from U.K.
1910-3 Average ..	2,843	2,237	78·7	17,646	12,779	72·4
1924	3,387	2,788	82·3	35,754	34,953	97·8
1925	3,009	2,231	74·1	41,582	41,052	98·7
1926	8,062	3,399*	42·1*	60,605	55,387*	91·4*

* Incomplete totals.

Some kinds of yarn are recorded by weight, and other kinds by length. The total quantities of yarn imported from the United Kingdom have been on the whole substantially greater than was the case before the war, and as regards yarn recorded by length (though not as regards yarn recorded by weight) the British proportion has been more than maintained. Since the war the French export trade in yarns has increased in importance (no doubt to a considerable extent as a result of the incorporation of Alsace-Lorraine), and in some years it has exceeded the import trade in value. Exports are consigned largely to Germany, Belgium and Switzerland, but also to the French Colonies and to countries such as Argentina.

The export trade in piece goods, so far as quantities are recorded in weight,† may be illustrated by the table overleaf.

† A small quantity of piece goods exported before the war, mainly to Algeria, were recorded by the number of pieces. Since the war the trade in these goods has been insignificant.

Exports from France of Cotton Piece Goods recorded by weight.
(In Metric tons.)

		1910-3 Average.	1924.	1925.	1926.
To United Kingdom	..	2,668	1,611	1,898	
Belgium*	..	2,337	2,668	1,933	
Germany..	..	584	19,280	5,068	Details
United States	..	1,285	1,645	883	not
Argentina	..	1,440	1,075	958	available.
Algeria	..	12,767	10,005	11,256	
Madagascar	..	3,862	901	2,444	
French Indo-China	..	5,823	4,655	6,047	
Other Countries..	..	9,734	13,225	12,287	
Total	..	40,500	55,045	42,774	49,797

* Figures for post-war years relate to Belgo-Luxemburg Economic Union.

Having regard to the strengthening of the French cotton industry through the incorporation of Alsace-Lorraine, and to the influence of exchange depreciation in stimulating exports, the actual expansion in the quantity of exports is moderate.

Imports of cotton piece goods into France averaged 1,988 metric tons in 1910-13, 1,948 tons in 1924, 2,116 tons in 1925 and 2,442 tons in 1926.

Italy.

The Italian cotton industry has grown rapidly since the introduction of hydro-electric power a quarter of a century ago, and is one of the most important branches of manufacture in Italy. The number of spindles was about 2 millions in 1900, about 4.6 millions in 1913, and about 4.9 millions in 1927. An indication of the pre-war and post-war position as regards output is given by the following figures of yarn production, trade and consumption† :—

(In Metric tons.)

Year.	Yarns Produced.	Yarns (incl. Sewing Cotton) Imported.	Yarns (incl. Sewing Cotton) Exported.	Yarns consumed in Italian mills or sold in Italy.
1910-13 average	.. 169,680	1,125	13,959	156,846
1924	.. 174,770	1,231	17,813	158,188
1925	.. 205,528	1,927	16,664	190,791

† International Cotton Bulletin, October, 1926, p. 90.

The progress made in spinning and weaving extends to the finishing processes—especially to dyeing and printing. In these branches the difficulty was at first to find technicians who could execute designs to compete with foreign designs, but this difficulty has been gradually overcome, and new methods and new machinery have enabled dyed and printed goods to be produced which can compete in the world's markets. The finishing industries are helped by the progress of dye manufacture in Italy which has been, to some extent, facilitated by the fact that Italy possesses important raw materials (mainly Sicilian sulphur). The majority of the big cotton mill undertakings, besides spinning and weaving, carry out their own bleaching, dyeing and printing, and send their work out only when some special dyeing, printing or finishing is required. Italy possesses a number of printing works, including one of the largest in Europe.

The expansion of the Italian cotton industry has brought with it an increased demand for foreign yarns. The following figures show the countries from which yarns (excluding sewing cotton) were obtained :—

Imports of Cotton Yarns (excl. Sewing cotton) into Italy.

(In Metric tons.)

		1910-13 Average.	1924.	1925.	1926.
United Kingdom	..	139	476	1,095	738
Switzerland	..	167	89	185	278
Germany	..	284	51	70	45
France..	..	23	140	174	126
Other Countries	..	40	95	38	36
Total	..	633	851	1,562	1,223

During the post-war years, the imports from the United Kingdom were much greater than in 1910-13, and also represented a much greater proportion (in fact a predominant share) of the total.

Italy had also built up before the war an export trade in yarns, mainly to the Near East and South America; and the quantity and value of the exports of yarns were, in fact, much greater than the quantity and value of the imports. This trade has been maintained, on the whole, at about the pre-war level of quantity.

Much more valuable than the export trade in yarns is the export trade in piece goods. The volume and distribution of the trade are shown in the table below :—

Exports of Cotton Piece Goods from Italy.

(In Metric tons.)

	1910-13 Average.	1913.	1924.	1925.	1926.
United Kingdom ..	334	405	531	611	525
Turkey	8,043	11,161	9,481	10,821	8,694
Roumania	1,673	915	3,681	4,552	4,140
Egypt	3,222	3,957	6,272	8,077	5,265
Eritrea	2,222	2,055	1,080	1,167	1,528
British India and Ceylon	2,331	4,082	1,927	2,179	2,699
Dutch East Indies ..	1,641	1,642	1,515	1,857	837
Argentina	8,763	11,010	9,486	11,447	9,750
Other Countries ..	12,972	15,153	19,119	24,813	18,186
Total	41,201	50,380	53,102	65,524	51,624

In 1925 and 1926 the particulars for the separate countries are, to some extent, incomplete, and to that extent the total for "other countries" is overstated. Italian exports of piece goods show substantial expansion in comparison with the average of the four years 1910-13, but the impression is somewhat different when comparison is made with the single year 1913, when exports amounted to 50,380 metric tons. Exports in 1925 were much above this level, but exports in 1924 and 1926 were only slightly above it.

Imports of cotton piece goods into Italy averaged 2,971 metric tons in 1910-13, 2,428 tons in 1924, 2,520 tons in 1925, and 2,987 tons in 1926.

Belgium.

The Belgian cotton industry is largely concentrated in Ghent and the surrounding districts of East Flanders. Spinning and weaving are for the most part carried on in separate establishments, but there appears to be no definite geographical separation. The industry is based mainly on the use of American and Indian cotton, the use of the latter having increased since the war. There has been an appreciable increase in the amount of machinery since 1914. The number of spindles was about 1·8 million in 1926, with about 30,000 looms. There is considerable export trade in yarns, mainly to neighbouring countries (including the United Kingdom); and there is a somewhat smaller import trade, mainly from the United Kingdom and France. Of the Belgian production of cloth

about half is exported. Co-operative selling organisations have been formed since the war to promote the export trade in yarns and fabrics. The comparative pre-war and post-war position of the export trade in piece goods is indicated in the following statement :—

*Exports of Cotton Piece Goods from Belgium.**

(In Metric tons.)

		1910-13 Average.	1924.	1925.	1926.
To United Kingdom	..	4,923	6,177	6,426	6,511
Netherlands	..	1,868	2,144	1,996	2,223
Turkey	..	2,010	1,120	1,611	1,890
Egypt	..	880	1,315	1,734	1,386
Belgian Congo	..	1,493	1,543	1,774	1,923
British India	..	2,382	917	431	595
United States	..	2,656	910	747	1,458
Argentina	..	3,046	3,677	3,237	3,277
Other Countries	..	7,950	8,305	5,765	8,576
Total	..	27,208	26,108	23,721	27,839

The quantity of exports in 1924-26 was on the average slightly below the pre-war figure. Exports to the United Kingdom, the Netherlands, Egypt, the Belgian Congo and Argentina were higher, but exports to British India and the United States were lower.

Imports of cotton piece goods into Belgium averaged 5,233 metric tons in 1910-13, 4,409 tons in 1924, 3,124 tons in 1925 and 3,001 tons in 1926.

Switzerland.

The cotton industry is carried on mainly in North-Eastern Switzerland. Spindles number about $1\frac{1}{2}$ million and looms about 27,000. Switzerland is an exporter of yarns mainly to Germany, and an importer of yarns mainly from the United Kingdom. The export trade to Germany has increased since the war, having amounted to 1,344 metric tons annually in 1910-13, 4,433 metric tons in 1924, 6,060 metric tons in 1925, and 3,345 metric tons in 1926. There is an important export trade in manufactured goods, consisting largely of fine fabrics and embroideries, and coloured and printed goods. The weight and distribution of the export trade are shown in the table overleaf.

* Figures for post-war years relate to the trade of the Belgo-Luxembourg Economic Union.

Exports of Cotton Piece Goods from Switzerland.

(In Metric tons.)

	1910-13 Average.	1924.	1925.	1926.
To United Kingdom*	93	48	38	123
Germany	1,128	2,112	3,125	881
France	116	319	176	600
Italy	153	182	141	303
Austria †	303	1,322	885	769
Roumania	254	92	99	107
Turkey, Arabia and Aden ‡	432	22	34	29
British India	339	29	56	108
Other Countries	1,413	2,771	1,894	2,201
	4,231	6,897	6,448	5,121

* Including British Possessions in the Mediterranean, but excluding Irish Free State in 1924-26.

† Austria-Hungary in 1910-13.

‡ Excluding Iraq 1924-26.

The export trade is somewhat greater than before the war.

The export figures as set out above exclude a substantial quantity of goods shipped from Switzerland "in the finishing trade." These goods enter Switzerland, mainly in the grey state, for the purpose of being finished, and they are subsequently sent to countries in all parts of the world. The amount of grey cloth entering Switzerland in the finishing trade was as follows in 1913, 1924, 1925 and 1926.

(In Metric Tons).				
	From United Kingdom.			From All Countries.
1913	702			1,554
1924	1,282			2,041
1925	1,163			2,195
1926	1,153			1,860

The bulk of the grey cloth entering from Great Britain in the finishing trade is intended to be bleached and mercerised or dyed and mercerised. A small quantity is to be bleached, dyed or printed only, or to undergo other processes or combinations of processes.

Czechoslovakia.

Czechoslovakia inherited about 80 per cent. of the cotton spindleage of Austria-Hungary and nearly 90 per cent. of the looms. She has about 3½ million spindles and 125,000 looms. The principal centre of the industry is in the north of Bohemia, but spinning and weaving are also carried on in other districts. Spinning and weaving

are to a considerable extent integrated, and it is estimated that about 40 per cent. of the yarn produced is used by spinners in their own weaving sheds. The finishing industries are in many cases linked up with spinning or manufacturing, but there are also numerous independent works which buy grey cloth, finish it and sell it.

Czechoslovakia carries on an important trade—both export and import—in yarns; and this may be illustrated by the following figures for 1924, 1925 and 1926 :—

				<i>In Metric Tons.</i>	
				<i>Imports.</i>	<i>Exports.</i>
1924	..	..	..	4,198	18,186
1925	..	..	..	3,610	26,339
1926	..	..	..	3,570	17,799

Imports of cotton yarn into Austria-Hungary in 1910-13 averaged 6,249 metric tons and exports 11,184 metric tons. A substantial quantity of yarns (mainly fine yarns) is imported from Great Britain, the amount being 1,086 metric tons in 1924, 1,082 metric tons in 1925, and 1,277 metric tons in 1926. Germany as a rule buys the greater part of the yarns exported from Czechoslovakia, and the bulk of the remainder goes to Austria-Hungary, Roumania, Jugo-Slavia and Poland.

Before the war the great bulk of the cotton piece goods manufactured in what is now Czechoslovakia were consumed in Austria-Hungary, the aggregate exports from which averaged only 12,035 metric tons in 1910-13. Exports from Czechoslovakia amounted to 32,114 metric tons in 1924, 40,891 metric tons in 1925 and 34,969 metric tons in 1926. Included in these figures are substantial quantities of piece goods exported to the other Succession States of Austria-Hungary. Czechoslovakia, however, has not had the free access to these markets which her manufacturers enjoyed before the war, and the constriction of these markets has caused severe depression in her industry.

Netherlands.

There is in the Netherlands a considerable and growing cotton industry, centred principally at Enschede in the province of Twente (Eastern Holland) near the German frontier. The equipment includes about 1,000,000 spindles, and 50,000 looms. The number of spindles has doubled since before the war, and the number of looms has increased by about two-thirds. The industry is to a marked extent integrated, more than half the spindles being owned by undertakings which also have weaving mills. Many firms do their own dyeing and finishing, and also carry on export trade through their own connexions overseas.

The production of the Dutch spinning mills does not suffice to meet the requirements of the weaving mills, and substantial quantities of yarn are imported. Comparable statistics of pre-war and post-war trade are not available, as the basis of the trade accounts has been entirely re-organised; but the following figures show the amounts of yarn imported and exported in 1924, 1925 and 1926 :—

(In Metric Tons.)

	1924.	1925.	1926.
<i>Imports of Yarn : Total</i>	31,849	35,246	30,715
From Great Britain	19,479*	26,230	20,505
Germany	6,586	4,457	7,780
Belgium	3,837	3,138	1,210
Poland and Danzig	533	639	795
<i>Exports of Yarn : Total</i>	1,692	3,016	2,291

* Excluding a small (unstated) quantity of bleached or dyed yarns.

Over 90 per cent. of the quantity of yarns imported consisted of grey yarns, and the bulk of these were British. Of the remaining yarns—consisting of bleached, dyed, or doubled yarns—the greater part was imported from countries other than Great Britain. Of the exports of yarns more than half were grey yarns, and the principal destinations were Germany, Great Britain and Argentina.

The import and export trade in manufactured goods may be illustrated by the following figures :—

(In Metric Tons.)

	1924.	1925.	1926.
<i>Imports : Total</i>	6,940	7,182	6,211
From Great Britain	4,115	5,137	3,809
<i>Exports : Total</i>		26,696	26,516
To Great Britain		1,683	1,777
Denmark		512	862
European Turkey	com-	586	774
Netherlands East Indies ..	parable	15,979	14,330
British India	figures	1,311	2,225
Ceylon	not	476	704
China and Hong Kong	avail-	396	471
British East Africa	able.	916	813
Union of South Africa		271	480
British West Africa		484	572

More than half the exports (14,507 tons in 1925 and 14,032 tons in 1926) were bleached goods. The greater part of these was exported to the Netherlands East Indies, and substantial quantities also to

British India, Ceylon, China and British East Africa. Coloured cottons (4,887 tons in 1925 and 5,472 tons in 1926) were next in importance. These were exported to the Dutch East Indies and other far Eastern countries (though not to China), to East and South Africa, etc. The distribution of cloth dyed goods (3,238 tons in 1925 and 2,870 tons in 1926) was similar, though the exports to Argentina were relatively more important. Printed goods (1,690 tons in 1925 and 1,743 tons in 1926) were exported largely to West Africa, while grey cloth (2,374 tons in 1925 and 2,399 tons in 1926) was sent largely to the Netherlands East Indies, to European Turkey and to Denmark.

It should be added that a large section of the import trade is trade in grey cloth brought in to be finished, while an important section of the export trade consists of goods finished but not manufactured in the Netherlands. The Dutch trade accounts give the following figures relative to this trade :—

(In Metric Tons.)

			Imports of grey cloth intended for printing or dyeing.		Exports of goods imported for bleaching.	
Year.			Total.	From Gt. Britain only.	Total.	To Neth. E. Indies only.
1924	..	..	857	850	(a)	(a)
1925	..	..	801	801	2,266	2,159
1926	..	..	586	583	1,865	1,778

(a) Not available.

The total quantity of unbleached goods imported into the Netherlands was 3,336 tons in 1925 and 2,400 tons in 1926, and it would appear that practically all of these goods were bleached, printed or dyed in the Netherlands.

Poland.

The Polish cotton industry is concentrated mainly in and around Lodz. It is estimated that before the war the present area of Poland contained 1,813,000 cotton spindles and 39,000 looms. The mills suffered severely during the war, and the equipment has apparently not yet been restored to its pre-war amount. The number of spindles in 1927, according to the International Federation of Master Cotton Spinners' and Manufacturers' Associations was 1,412,000; and the number of looms was put at 35,000 in 1926.

Before the war the industry used mainly the low grade Turkestan cotton, the import of American and other growths of cotton being restricted by a tariff. The yarn and cloth produced were almost entirely of coarse qualities, and they were sold largely in the more distant provinces of the Russian Empire. A comparatively small part is said to have been consumed in Poland itself, the Poles purchasing goods of somewhat higher quality made in Russia or imported from abroad. Since the war the raw material used has been mainly American, together with some Egyptian and East Indian cotton. American cotton is obtained mainly through England and Germany, this being due to the fact that Polish manufacturers can more readily obtain the long term credits, which they require, in Europe than in America. Corresponding with the change in the raw material used has been a change in the quality of the goods produced. Being largely shut off from their former markets, Polish manufacturers have sought to develop their own internal market and to find new markets abroad. With its 30 million inhabitants, Poland itself constitutes a very large market, the purchasing power of which may be expected to increase as economic conditions become more normal.

The industry has passed through many vicissitudes since the war, and these have been accentuated by currency disturbances. Since the restoration of stable conditions towards the end of 1926, the industry has been active, and production is said to have approached the limit of productive capacity.

The following figures relate to imports and exports of cotton yarn in 1924, 1925 and 1926 :—

(In Metric Tons.)

	1924.	1925.	1926.*
<i>Imports of Yarn : Total</i>	<i>1,758</i>	<i>1,738</i>	<i>1,892</i>
From Great Britain	413	417	384
Austria	603	442	580
Czechoslovakia	105	126	361
France	140	267	181
Germany	466	410	217
<i>Exports of Yarn : Total</i>	<i>930</i>	<i>1,979</i>	<i>2,423</i>
To Great Britain	97	106	42
Netherlands	255	615	555
Germany	184	97	(?)
Roumania	156	687	808

* Details for individual countries incomplete.

The import trade is mainly in medium and fine yarns, the export trade almost entirely in coarse yarns

The import and export trade in cotton-tissues may be illustrated by the following figures :—

(In Metric Tons.)

		1924.	1925.	1926.*
<hr/>				
<i>Imports of Tissues : Total</i>	..	4,915	5,060	976
From Great Britain	..	527	929	226
Austria	..	1,620	1,628	151
Czechoslovakia	..	978	1,096	196
France	..	351	272	52
Germany	..	1,095	728	170
Switzerland	..	223	220	42
<i>Exports of Tissues: Total</i>	..	5,310	5,014	4,080
To Austria	..	336	153	108
Latvia	..	364	227	193
Germany	..	170	132	4
Russia	..	27	1,981	305
Roumania	..	3,955	2,539	2,256
<hr/>				

* Details for individual countries incomplete.

India.

India is of great importance in the cotton trade (1) as a producer of raw cotton, (2) as a producer of cotton yarns and fabrics both by handicraft and by machinery, and (3) as a very large consumer of cotton yarns and cloths, home-produced and imported. India's position as a producer of raw cotton has been referred to earlier (*see* p. 81). She is one of the oldest seats of the cotton industry, and in the early days of the East India Company, her muslins and other fine products were unrivalled in quality. At that time the industry was carried on entirely by hand, and a substantial part of the cotton worked up in India is still spun and woven by hand in domestic manufacture. Since the middle of the nineteenth century a factory system has been established, the main centre of which is the island of Bombay, where some 41 per cent. of the spindles and 47 per cent. of the looms are located. The number of spindles increased steadily up to 1913 when it approached 6½ millions. Since the end of the war growth has been rapid, the number of spindles in 1927 exceeding 8½ millions. The number of looms has increased rapidly during the present century, from 40,000 in 1900 to 83,000 in 1910 and 154,000 in 1925. India's position as a producer and consumer of yarns and cloth may be indicated in the two tables on page 100, summarised from the Report of the Indian Tariff Board on the cotton textile industry and brought up to date.*

* Bombay. Government Central Press, 1927.

I. *Cotton Yarn.*

Annual Average for	Retained Imports.	Indian Mill Pro- duction.	Exports of Indian Yarn.	Net Con- sumption of Indian Mill Pro- duction.	Total Indian Con- sump- tion.	Popula- tion.	Con- sumption of yarn per Capita.
			(Millions of lbs.)			(millions)	(lb.)
1900-01 to 1904-05	27.6	532	234	298	325	297	1.09
1905-06 to 1909-10	34.7	652	251	401	436	307	1.41
1910-11 to 1913-14	34.6	651	193	458	493	315	1.56
1922-23 ..	53.0	706	64	642	695	319	2.17
1923-24 ..	39.5	617	46	571	611	320	1.90
1924-25 ..	50.5	719	46	673	724	320	2.26
1925-26 ..	50.6	686	43	643	694	320	2.17
1926-27 ..	48.5	807	54	753	802	320	2.51

II. *Cotton Piece Goods.*

	Re- tained Im- ports.	Indian Production.				Balance avail- able for Con- sump- tion.	Total Indian and Foreign piece Goods avail- able for Con- sumption	Con- sump- tion per Capita.
		Mills.	Hand- looms.	Total.	Exports of Indian Piece Goods.			
				(Millions of yds.)				yds.
1900-01 to 1904-05	1,992	545	846	1,391	120	1,271	3,263	10.97
1905-06 to 1909-10	2,174	801	1,070	1,871	119	1,752	3,926	12.80
1910-11 to 1913-14	2,579	1,141	1,015	2,156	127	2,029	4,608	14.63
1922-23 ..	1,467	1,725	1,341	3,066	186	2,880	4,347	13.62
1923-24 ..	1,374	1,702	1,005	2,707	201	2,506	3,880	12.12
1924-25 ..	1,710	1,970	1,256	3,226	230	2,996	4,706	14.71
1925-26 ..	1,397	1,954	1,116	3,070	232	2,838	4,235	13.23
1926-27 ..	1,607	2,259	1,284	3,543	280	3,263	4,870	15.22

India produces the bulk of the yarns which she consumes, and before the war she was a large exporter of yarns, the exports far exceeding the imports in quantity. Since the war exports have been reduced and imports have been increased, notwithstanding a somewhat higher level of Indian production. The increased demand for yarns is of course connected with the advance of the weaving industry. Handloom weaving is still of substantial importance, but the output of the mills is over 50 per cent. in excess of the handloom production. The aggregate Indian production of cloth in the last three years for which figures are available was half as great again as on the average of the four years immediately preceding the war. An important factor has been the change in the relation between the excise duty on piece goods (grey cloth) manufactured in India and the customs duty on imported cotton piece goods. In 1913 both the customs and excise duty were $3\frac{1}{2}$ per cent. *ad valorem*, but since the war the customs duty has been raised to 11 per cent., while the excise duty remains unaltered. The increase of Indian production has synchronised with a material reduction in imports of cloth. Table II shows that in the post-war years before 1924-25 imports were reduced below the pre-war level to an extent more than corresponding with the increase in the consumption of Indian cloth, a consequence doubtless of poverty and high prices; but, taking the average of the last three years, the aggregate amount of cloth available for consumption in India has recovered to the pre-war level.

The gross imports of yarns and piece goods into India in the five years immediately preceding the war and in 1924-25 to 1926-27 are analysed according to countries in the following tables:—

Gross Imports of Yarns into India.

(In Thousands of lb.: years ending 31st March.)

		1910-11 to 1913-14 Average.	1924-25.	1925-26.	1926-27.
From—					
United Kingdom	..	37,152	20,759	15,980	20,106
Japan	.. ..	572	32,325	33,525	26,619
Other Countries	.. ..	4,443	2,823	2,183	2,700
Total	..	42,167	55,907	51,688	49,425

Gross Imports of Piece Goods into India.
(In Thousands of yards : years ending 31st March.)

		1910-11 to 1913-14 Average.	1924-25.	1925-26.	1926-27.
From—					
<i>United Kingdom</i>		2,669,392	1,613,987	1,286,708	1,460,874
Of which—					
Grey Cloth		1,338,837	727,421	561,391	588,782
White Cloth		682,768	532,915	446,266	550,285
Coloured, Printed or Dyed		629,819	338,403	267,405	318,300
<i>Japan</i>		3,890	155,303	216,826	243,587
Of which—					
Grey Cloth		3,198	109,839	142,609	154,865
White Cloth		53	4,484	4,675	2,882
Coloured, Printed or Dyed		639	40,979	69,542	85,822
<i>Netherlands</i>		23,977	11,710	16,473	19,713
Of which—					
Coloured, Printed or Dyed		15,344	6,208	10,101	13,697
<i>Italy</i>		12,291	10,258	10,878	17,256
Of which—					
Coloured, Printed or Dyed		11,997	9,648	9,807	15,551
<i>United States</i>		10,909	9,357	15,146	15,691
<i>Other Countries</i>		20,959	22,625	17,682	24,823
Total: All Countries		2,741,418	1,823,240	1,563,713	1,787,944
Of which—					
Grey Cloth		1,354,563	845,511	709,085	748,411
White Cloth		694,558	548,876	465,112	570,952
Coloured, Printed or Dyed Cloth		673,733	406,971	365,836	447,442

The outstanding factor as regards both yarns and piece goods is the entry of Japan as a powerful competitor in the Indian trade. Japan now contributes the greater part of the weight of yarns imported into India, and it is to be noted that, while the total volume of trade in yarns has increased since the war, imports from the United Kingdom have fallen absolutely as well as relatively. In the piece goods trade there has been a decline in total imports, and the British share has fallen from 97·4 per cent. pre-war to 88·6 per cent. in 1924-25, 82·2 per cent. in 1925-26, and 82·1 per cent. in 1926-27. The Japanese trade is practically confined to grey and coloured, printed or dyed cloth ; it does not extend to any considerable extent to white cloth. It should be added that the great bulk of the Indian trade is in the coarser and cheaper qualities of goods

The Indian export trade in yarns and piece goods is illustrated by the following tables :—

Exports by Sea of Twist and Yarn from India.
(In Thousands of lb.)

		1910-11 to 1913-14 Average.	1924-25.	1925-26.	1926-27.
To—					
United Kingdom	..	639·6	508·7	326·1	283·0
Turkey (European)	..	285·6	364·2	786·2	195·0
Mesopotamia	.. ..	2,600·0*	921·4	796·5	1,036·0
Syria	.. ..	†	2,376·3	1,782·4	3,598·6
Aden and Dependencies	..	1,938·9	2,853·2	2,613·0	3,763·8
Persia	.. ..	1,952·0	3,228·4	3,617·2	4,415·3
Straits Settlements	..	4,241·5	830·8	1,087·0	1,177·6
Siam	.. ..	242·6	1,428·6	1,679·0	1,605·6
China	.. ..	80,896·1	207·2	144·6	16,813·2
Hong Kong	.. ..	81,469·3	14,288·0	9,534·9	
Egypt	.. ..	2,125·3	6,666·6	5,095·1	5,064·4
Other Countries	.. ..	7,822·5	2,858·7	4,411·7	3,561·5
Total	.. ..	184,213·4	36,532·1	31,873·7	41,514·0

* Persian Gulf. Partially estimated. † Included in "Other Countries."

Exports by Sea of Piece Goods from India.
(In Thousands of Linear yards.)

		1910-11 to 1913-14 Average.	1924-25.	1925-26.	1926-27.
To—					
Mesopotamia	.. ..	12,460*	43,893	33,668	38,335
Aden and Dependencies	..	10,209	5,826	4,516	6,616
Arabia	.. ..	2,629	6,544	4,988	7,530
Persia	.. ..	6,635	33,148	28,994	37,786
Ceylon	.. ..	9,447	16,006	18,435	21,677
Straits Settlements	..	14,701	21,268	26,160	25,426
Egypt	.. ..	2,529	1,883	2,766	3,416
Union of South Africa	..	177†	1,177	1,686	1,228
Mauritius	.. ..	1,979	1,616	2,698	2,373
Portuguese East Africa	..	5,224	9,363	8,920	10,339
Tanganyika	.. ..	6,773	6,803	6,962	9,531
Kenya, Zanzibar and Pemba	..	5,574	10,650	10,254	13,213
Other Countries	.. ..	10,904	23,334	14,787	19,931
Total	.. ..	89,241	181,511	164,834	197,401

* Persian Gulf. Partially estimated.

† Cape Colony and Natal.

The outstanding feature of the yarn export trade is the very great falling-off, from 162,365,000 lb. pre-war to 16,813,000 lb. in 1926-27, in shipments to China and Hong Kong. The total exports have declined to about the same extent, but the quantities sent to some of the Near East and Middle East countries (e.g. Egypt and Persia) show an increase.

In the piece goods trade there has been a substantial expansion in total exports, due mainly to increases in the quantities sent to Mesopotamia, Persia, Ceylon, Straits Settlements and East Africa.

Japan.*

Modern cotton mills were first erected in 1867, and the rapid development of the industry dates from about 1894. By 1913 there were 2·4 million spindles and 24,000 looms. The war accorded to the industry special opportunities and led to a further great expansion. Not only did Japanese manufacturers find themselves freed from competition in their main foreign market—China—but owing to the incapacity of England and other regular suppliers to meet the demand, they were enabled to build up a great trade in substitute goods with markets such as India, the Dutch East Indies, South America, Africa and other countries to which they had not previously found entry. By 1920 the equipment of the industry had risen to 3·8 million spindles, and 50,500 looms, and by 1927 there had been a further increase to 5·7 million spindles and 75,000 looms, notwithstanding a short lived slump in 1920-21 and the earthquake disaster of 1923. It will be observed that the number of looms has increased in greater proportion since 1913 than the number of spindles; and, in consequence, while Japan formerly produced large quantities of yarn for export, the export now consists predominantly of cloth. With the exception of the silk industry, the cotton industry is the only one of Japan's industries which has on the whole emerged unweakened from the post-war period, a fact which is ascribed to three causes, namely, the natural suitability of the country for an extension of the industry, the excellent manner in which the industry is organised and managed, and the strong foundations established in the past quarter of a century. The Japanese industry, like that of Great Britain, depends entirely on imported material. Over half the cotton consumed is Indian and about two-fifths is American, the proportion of American being larger than before the war, partly owing to the improvement of transport through the opening of the Panama Canal. An element in the success of the Japanese Cotton industry is said to be the skill exercised in mixing Indian, Chinese and American Cotton, enabling fairly good cloth to be made from cheap material.

* This account is based largely on the "Report on the Cotton Spinning and Weaving Industry in Japan, 1925-26," prepared by H.M. Consul at Osaka and published by H.M. Stationery Office, 1927. Price 3s. net.

Japanese production is practically confined to coarse yarns and piece goods, which can be produced by unskilled or semi-skilled labour—largely female. A tendency is noticeable to produce somewhat finer yarns than was formerly the case, but the average efficiency of the operatives is said to show little improvement, the great difficulty being the comparatively short length of time during which women operatives remain in the mill. As regards the finishing processes, there has been a marked development of bleaching and dyeing works, but the number of establishments undertaking printing is still relatively small.

The export trade, which now absorbs the greater part of Japan's production of cotton goods, is mainly in the hands of merchants, the principal exporters being three large raw cotton importing firms. The close connexion which exists between the cotton importing, the spinning and weaving, and the exporting interests is said to be an important element in the strength of the Japanese cotton trade; while another important factor is the extent to which the industry is concentrated in the hands of a few powerful firms.

The quantity and distribution of the Japanese export trade in yarns before and after the war are shown in the following table:—

(In Thousands of lb.)

To	1910-13 average.	1924.	1925.	1926.
China	127,262	41,106	55,015	30,342
Hong Kong	9,325	24,403	23,329	11,622
British India	671	32,081	34,593	28,685
Straits Settlements	7	948	634	374
Dutch East Indies	5	2,837	3,578	4,184
Philippine Islands	1,339	714	1,260	1,270
Other Countries	960	5,201	4,930	5,094
Total	139,569	107,290	123,339	81,571

In comparison with pre-war years there has been a very great reduction in shipments to China, but a large increase in shipments to British India and the Dutch East Indies.

The Japanese trade accounts do not enable piece goods exported to be so concisely summarised by countries as is possible in the case of yarns. Some piece goods are enumerated by pieces, some by yards, some by dozens and some by value only. As judged by value*, however, the great bulk of the piece goods exported is enumerated

* On the average of the years 1910-13 goods enumerated by yardage represented 75.5 per cent. of the value of all cotton piece goods exported. For 1924, 1925 and 1926 the corresponding percentages are 90.9, 91.1 and 91.1.

in yards, and the following statement which relates to these goods may be regarded as indicating roughly the change which has occurred since the war in the extent and distribution of the trade in piece goods.

Exports from Japan of Cotton Piece Goods enumerated by yards.

To	1910-13 Average.	1924.	1925.	1926.
	Th. yds.	Th. yds.	Th. yds.	Th. yds.
China	129,444	463,253	606,839	674,459
Hong Kong	7,257	53,294	55,649	67,947
British India	3,554	143,359	204,876	235,183
Straits Settlements	1,653	15,435	34,909	29,653
Dutch East Indies	1,731	89,076	114,541	117,205
Philippine Islands	3,606	17,701	28,655	24,336
Other Countries	8,745	177,953	167,480	199,665
Total	155,990	960,071	1,212,949	1,348,448

It is obvious that a gigantic expansion of trade has occurred since before the war, especially to China, India and the Dutch East Indies, but to many other countries also. It should be added that in certain directions (notably to India) Japanese trade was expanding very rapidly before the war. Thus, while exports to India averaged 3,554,000 yards in 1910-13, the figures for the individual years show a growth from 545,000 yards in 1910 to 6,932,000 yards in 1913.

The causes of the expansion of Japanese trade in piece goods, and particularly of Japan's success in competition with Lancashire, were examined in a paper* read by Mr. Barnard Ellinger on 9th November, 1927 before the Manchester Statistical Society. Mr. Ellinger put in Memoranda by a well-known Lancashire manufacturer Mr. J. H. Grey, purporting to show that, despite lower labour costs in Japan, the total cost of producing cloth from bought yarn was actually higher in Japan than in Lancashire. Corresponding data regarding spinning costs were not available. From a comparison of Japanese prices of grey cloth with Lancashire prices for similar goods it appeared that the advantage was not with the Japanese and that on the contrary British goods were on the average 7 per cent. cheaper. Mr. Grey's view was that the success of the Japanese in competition was due partly to their methods of specialising on certain lines, but more particularly to their methods of marketing. Mr. Ellinger emphasised the adoption by the Japanese of modern methods in reducing the number of varieties of cloth as a step making for lower marketing costs, and he said that while the bulk of English imported goods in China are retailed with a 10 to 15 per cent. profit, a considerable proportion of the Japanese goods is

* Lancashire's declining trade with China : causes and remedies.

retailed with a 5 per cent. profit, the reason being that the demand is so large and the turnover so quick that the goods never hang fire. It may be added that Japanese finishing costs, according to Mr. Ellinger, are substantially lower than those of Lancashire; while the task of the finishing industry in Japan is simplified in consequence of the methods of mass production.

China.

China is a large producer of raw cotton—mainly of very short staple—and spinning and weaving have been carried on as handicraft industries from remote times. China has also long been, and still remains, a large importer of foreign produced cotton goods, but her consumption of these is far exceeded by the consumption of cotton goods made in China. Within the past generation a cotton industry on modern lines has been established in China, and although the output of cloth from this industry is only a small fraction of the output of the handicraft industry, it is rapidly growing, and bids fair to be a factor of world importance in the future. The disturbed state of China, however, can hardly fail to retard progress. The development of the industry began about 1895, and since the outbreak of the Great War it has been extraordinarily rapid. The following statistics* relating to mills, spindles and looms indicate the extent of the expansion:—

Number and Ownership of Cotton Mills in China.

Year.	No. of Mills.	Spindles.	Looms.
<i>Grand Total.</i>			
1896	12	417,000	2,100
1915†	31	1,008,986	4,564
1923	119	3,581,214	22,477
1924	118	3,569,440	21,644
1925	118	3,414,062	25,934
<i>British Owned.</i>			
1915	4	195,056	924
1923	5	250,516	2,863
1924	4	205,320	2,348
1925	4	205,320	2,348.
<i>Chinese Owned.</i>			
1896	7	259,000	1,750.
1915	22	544,010	2,254
1923	73	2,112,154	13,689.
1924	69	2,032,816	13,371
1925	69	1,881,822	16,381
<i>Japanese Owned.</i>			
1915	3	165,952	886
1923	41	1,218,544	5,925
1924	45	1,331,304	5,925
1925	45	1,326,920	7,205

* Quoted from an article on the "Expansion of the Chinese Cotton Industry in Recent Years" which appeared in the International Cotton Bulletin for January, 1927, p. 225.

† Including one German and one Anglo-German mill with a total of 103,968 spindles and 500 looms.

It will be seen that since 1915 the number of spindles has increased more than three-fold, and the number of looms more than five-fold. About one-third of the industry is under Japanese control. The greater part of the industry is concentrated in the neighbourhood of Shanghai.

The principal factors making for development are said to have been :—

- (1) A supply of native-grown cotton of sufficiently good quality for spinning low counts of yarn.
- (2) An enormous domestic demand for the products of the mills, which, in the case of yarns, far exceeds that of any other country in the world.
- (3) Low cost of power, a good supply of coal from native mines and from Japan being available, while in Shanghai an unusually low rate is charged for electric power.
- (4) An abundance of very cheap labour.

Mainly for these reasons, it is said that the cost of production is lower than in any other part of the world.

Professor Daniels and Mr. Jewkes * give the following estimate of the annual consumption of cotton cloth in China under pre-war and post-war conditions :—

Estimated Consumption of Cotton Cloth in China.

(In millions of lb.)

—		(1) Imports <i>less</i> Exports.	(2) Mill produced Cloth.	(3) Hand-loom produced Cloth.	Total.
Pre-war	..	307	10	570	887
Post-war	..	265	27	870	1,162

These figures suggest that the total consumption of cloth has increased, more being produced in the country and less being imported.

So far as British trade is concerned, the comparative position is considerably worse than is indicated by the figures of total imports into China, for Great Britain has lost ground relatively to other countries—in particular Japan. Before the war Japan was improving her relative position in the Chinese market, and during the war she was able very greatly to strengthen her position as against both Great Britain and other countries. In his paper on "Lancashire's Declining Trade with China," read before the Manchester Statistical Society, Mr. Barnard Ellinger estimated that while Great Britain

* In a paper on the "Comparative Position of the Lancashire Industry and Trade" read before the Manchester Statistical Society on 12th January, 1927.

furnished 68 per cent. in quantity and 72 per cent. in value of the cotton piece goods (other than Chinese made goods) imported into China in 1913, she furnished only 26 per cent. in quantity and 33 per cent. in value of the piece goods imported in 1925. On the other hand, Japan furnished 23 per cent. in quantity and 18 per cent. in value of the piece goods imported in 1913, and 74 per cent. in quantity and 67 per cent. in value of those imported in 1925. It may be noted that, while in 1913 countries other than Great Britain and Japan (mainly the United States and Russia) shared in the Chinese trade to the extent of 9 per cent. of the quantity and 10 per cent. of the value, these other countries had been practically eliminated from the trade in 1925. The proportionate share of the Japanese is greatest in grey and printed goods, somewhat less in dyed goods and lowest (less than half) in white goods.

Netherlands East Indies.

These are a very important market for imported cotton goods. The aggregate quantity of piece goods imported in 1924 was 41,276 metric tons, and in 1925 54,120 metric tons. Pre-war figures as to quantities are not available, but the value of imports in 1924 was 46 per cent. greater than in 1913 and in 1925 93 per cent. greater than in 1913. On the assumption that the value per ton was fully twice as great in 1924 and 1925 as in 1913, it appears that the volume of imports fell off. Reckoning the aggregate value of imports of cotton piece goods in each year as 100, the changes in the character and source of goods may be represented as follows:—

Analysis on the basis of values of Cotton Piece Goods imported into the Dutch East Indies in 1913, 1924 and 1925.

			1913.	1924.	1925.
			Per cent.	Per cent.	Per cent.
<i>Grey—Total</i>	..	..	9.7	12.9	10.6
From Netherlands	..	..	4.4	1.0	1.0
Great Britain	..	..	4.4	1.9	1.5
Japan	..	..	0.0	8.5	7.0
<i>Bleached—Total</i>	..	..	38.7	39.2	38.5
From Netherlands	..	..	21.3	21.1	19.3
Great Britain	..	..	14.6	12.6	14.1
Japan	..	..	0.3	1.9	1.9
<i>Dyed, Printed, etc.*—Total</i>	..	..	51.6	47.9	50.9
From Netherlands	..	..	15.9	4.9	4.9
Great Britain	..	..	22.9	18.3	19.3
Japan	..	..	0.2	13.5	14.3
<i>All Kinds*—Total</i>	..	..	100.0	100.0	100.0
From Netherlands	..	..	41.6	27.0	25.2
Great Britain	..	..	41.9	32.8	34.9
Japan	..	..	0.5	23.9	23.2

* Excluding Sarongs, Slendangs, Headwear, etc.

These figures show that since the war Japan has become dominant in the trade in unbleached piece goods and important in the trade in dyed and printed goods. In the bleached goods trade Japan remains relatively unimportant. Part of the trade credited to the Netherlands may represent goods manufactured in Great Britain or Germany, though perhaps finished in the Netherlands.

Straits Settlements.

On the basis of values, the proportionate distribution of the import trade in piece goods before the war and in 1924 and 1925 was as follows :—

		1910-13 Average.	1924.	1925.	1926.
		Per cent.	Per cent.	Per cent.	Per cent.
<i>Plain</i>	.. ..	54.8	42.0	40.0	33.7
From United Kingdom	.. ..	49.1	31.9	29.9	22.4
Hong Kong	.. ..	0.6	2.8	1.8	1.2
Japan	.. ..	1.1	2.9	3.4	3.1
Netherlands	.. ..	1.9	1.4	2.0	2.3
<i>Dyed in the Piece</i>	.. ..	30.7	36.7	40.9	47.1
From United Kingdom	.. ..	17.5	16.2	19.5	21.6
Hong Kong	.. ..	2.8	2.1	1.6	0.8
China	.. ..	1.6	6.3	5.1	6.4
Japan	.. ..	0.5	5.5	6.8	8.8
Italy	.. ..	3.2	4.4	4.9	5.6
<i>Printed</i>	.. ..	14.5	21.3	19.1	19.2
From United Kingdom	.. ..	12.7	14.9	12.4	13.2
Hong Kong	.. ..	0.2	1.1	1.2	0.6
Japan	.. ..	0.2	2.8	3.6	3.5
<i>Total</i>	.. ..	100.0	100.0	100.0	100.0
From United Kingdom	.. ..	79.3	63.0	61.8	57.2
Hong Kong	.. ..	3.6	6.0	4.6	2.6
Japan	.. ..	1.8	11.2	13.8	15.4

In the above table "plain" goods may be taken as including both grey and bleached goods.

The outstanding facts are the diminished proportion of British goods imported and the increased proportion of Japanese goods imported. Imports of Chinese goods dyed in the piece have also assumed importance.

No direct comparison of quantities can be made, as these were not distinguished until after the war. The aggregate value of imports increased from an annual average of £2,092,000 pre-war to £3,491,000 in 1924, £5,292,000 in 1925 and £4,713,000 in 1926; and as it may be assumed that prices somewhat more than doubled, the volume of imports in 1925 and possibly 1926 (but not in 1924) reached or exceeded the pre-war volume. The quantity of imports was 111,542,000 yards in 1924, 167,830,000 yards in 1925 and 147,876,000 yards in 1926.

Ceylon.

The following comparative Table relates to imports of grey, bleached, dyed and printed piece goods :—

Thousand Linear Yards.

	1911-13 Average.	1924.	1925.	1926.
<i>Grey—Total</i>	6,680	3,924	4,783	5,548
From United Kingdom ..	5,669	2,413	3,355	4,035
Br. India	242	531	592	574
Japan	—	615	373	427
Netherlands	8	6	—	—
United States	755	358	463	511
<i>Bleached—Total</i>	14,329	10,058	17,001	13,209
From United Kingdom ..	13,725	8,791	15,552	11,179
Br. India	512	371	320	549
Japan	6	60	36	239
Netherlands	53	420	954	982
<i>Dyed—Total</i>	20,557	22,495	23,569	28,950
From United Kingdom ..	7,072	2,835	4,874	5,914
Br. India	9,549	13,045	12,735	15,715
Japan	91	2,224	2,184	2,275
Netherlands	2,386	2,792	3,573	4,659
<i>Printed—Total</i>	7,984	5,545	8,028	11,816
From United Kingdom ..	7,675	5,395	6,291	7,918
Br. India	266	63	30	57
Japan	2	76	1,640	3,590
Netherlands	11	—	61	232
<i>Grand Total</i>	49,550	42,022	53,381	59,523
From United Kingdom ..	34,141	20,434	30,072	29,046
Br. India	10,569	14,010	13,677	16,895
Japan	99	2,975	4,233	6,531
Netherlands	2,458	3,218	4,588	5,823

In 1925 and 1926 total imports were substantially above the pre-war level. Great Britain has lost some ground since before the war—to British India and Japan in grey cloth; to the Netherlands in bleached cloth; to British India, Japan and the Netherlands in dyed cloth, and to Japan in printed cloth. The position of British trade is relatively most favourable in regard to bleached cloth.

Egypt.

Professor Daniels and Mr. Jewkes give the following estimate* of the pre-war and post-war annual consumption of Cotton Piece Goods in Egypt :—

Average for Years.	(1) <i>Imports of Piece Goods.</i>	(2) <i>Exports and Re- exports.</i>	(3) <i>Imports of Yarn.</i>	Total <i>i.e., (1) + (3) - (2).</i>
	(In Metric tons.)			
1911-13 ..	25,594	297	2,936	28,233
1922-25 ..	28,526	685	2,953	30,794

* See footnote on page 108.

It appears that the total consumption is somewhat greater than it was before the war. On the basis of values the following table shows the percentage distribution of the import trade in piece goods among the participating countries in 1913, 1924, 1925 and 1926 :—

		1913.	1924.	1925.	1926.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
From—					
Great Britain	..	81.8	67.2	61.9	54.2
Germany	.. ..	1.6	0.3	0.3	0.8
France	.. ..	1.0	1.6	1.2	6.7
Belgium	.. ..	0.3	3.4	3.5	4.2
Italy	.. ..	13.1	22.4	25.9	23.6
Japan	.. ..	—	3.0	4.5	6.6
Other Countries	..	2.2	2.1	2.7	3.9
Total	..	100.0	100.0	100.0	100.0

Great Britain has decidedly lost ground in the Egyptian market, while Italy has increased her proportion from 13.1 per cent. in 1913 to 23.6 per cent. in 1926 ; and France, Belgium and Japan have increased their proportions in a smaller degree.

The following details taken from the Egyptian trade accounts for 1925 show clearly that British goods occupy a relatively better position in the trade in light piece goods (which are largely of good quality) than in heavy piece goods.

Imports into Egypt in 1925 (in £E,000's).

		Heavy.			Light.		
		Total Value.	From Great Britain.	Per cent. from Great Britain.	Total Value.	From Great Britain	Per cent. from Great Britain.
Grey	..	590.3	161.1	27.3	547.9	545.4	99.5
Bleached	..	1,432.1	1,326.2	92.6	547.7	541.4	98.8
Printed	..	1,449.1	1,117.3	77.1	448.5	314.6	70.1
Piece dyed	..	1,305.9	760.4	58.2	416.1	314.8	75.7
Yarn dyed	..	1,486.7	278.8	18.8	69.9	43.2	61.8
Other	..	855.1	246.4	28.8	107.9	78.9	73.1
Total	..	7,199.2	3,890.2	54.6	2,138.0	1,838.3	86.0

British trade in bleached goods, both heavy and light, meets little competition, such as there is coming mainly from Italy, Holland and Belgium. The main competition in heavy grey piece goods is from Japan ; that in printed goods from Italy and France, and, to a

less extent, Germany. In piece-dyed goods and in yarn-dyed goods Italy again is the principal competitor, with smaller quantities from Holland and Belgium and (in the case of yarn-dyed goods) from British India.

Kenya.

The position here may be noted as indicating the state of competition in East Africa. Quantities of piece goods imported for home consumption from the principal countries in 1913-14, 1924, 1925 and 1926 were as follows :—

	1913-14.*	1924.	1925.	1926.
	<i>Th. yds.</i>	<i>Th. yds.</i>	<i>Th. yds.</i>	<i>Th. yds.</i>
<i>Grey unbleached—Total</i> ..	23,052	17,260	16,539	14,196
From United Kingdom ..				
India				
Japan				
U.S.A.				
Italy				
<i>Bleached—Total</i> ..				
From United Kingdom ..				
Netherlands ..				
<i>Printed—Total</i> ..				
From United Kingdom ..	952	2,200	2,001	2,110
Netherlands ..	1,385	303	214	226
<i>Dyed in the Piece—Total</i> ..	3,678	5,666	5,902	3,818
From United Kingdom ..	2,424	4,183	3,954	2,798
India	477	588	417	218
Germany	245	99	148	59
Netherlands ..	241	367	637	447
<i>Coloured Cottons—Total</i> ..		5,534	6,462	5,760
From United Kingdom ..		1,027	940	677
India	Cannot	2,154	2,501	2,092
Belgium	be	512	406	553
Netherlands ..	stated.	467	1,164	1,024
Japan		899	1,018	1,188
<i>Grand Total : all kinds</i> ..	35,789†	34,764	35,835	29,155
From United Kingdom ..	9,980†	9,955	10,370	7,435

* Imports for year ending March.

† Exclusive of coloured cottons.

In the grey cloth trade Japan and India have become dominant, mainly it would seem at the expense of the United States, which exported to East Africa before the war a large quantity of coarse and relatively cheap cloth.

In bleached cloth the total trade has diminished and practically the whole loss has fallen on the United Kingdom, which, however, still retains over half the trade. In printed cloth the share of the

United Kingdom has increased, and this country now dominates the market. In dyed cloth, goods from the United Kingdom occupy a predominant position, as they did before the war. In coloured cottons, India, the Netherlands, and Japan are the main competitors, and the two last named have improved their position during the three post-war years shown in the Table.

Gold Coast.

This is a substantial and, on the whole, increasing market for piece goods. The pre-war and post-war position of British trade is indicated by the following figures :—

Imports of Piece Goods.

		<i>From all Countries. Th. sq. yds.</i>	<i>From United Kingdom. Th. sq. yds.</i>	<i>Percentage from United Kingdom.</i>
1910-13 average ..		25,700*	22,800*	88.7
1924		21,085	14,637	69.4
1925		32,245	23,929	74.2
1926		29,414	20,092	68.3

* Estimated from Linear yards.

It is clear that British trade has not maintained its position relatively to other countries, and, except in 1925 did not maintain its absolute position. Competition is mainly in printed goods from Germany, the Netherlands and Switzerland, with regard to which the following figures may be given :—

Imports of Printed Piece Goods.

	1924. <i>Th. sq. yds.</i>	1925. <i>Th. sq. yds.</i>	1926. <i>Th. sq. yds.</i>
From—			
United Kingdom ..	8,486	13,519	10,575
Germany	1,001	1,882	2,207
Netherlands ..	3,890	4,883	5,009
Switzerland ..	599	499	814
Total (including Other Countries)	14,130	20,925	18,802

Comparable figures for the pre-war period are not available.

Nigeria.

In this market British piece goods have hitherto met with no substantial competition. The quantities of imports in 1924, 1925 and 1926 compare as follows with the quantity in 1912 and 1913 (average) :—

Imports of Piece Goods.

	<i>Total.</i> <i>Th. lb.</i>	<i>From</i> <i>U.K.</i> <i>Th. lb.</i>	<i>Per cent.</i> <i>from</i> <i>U.K.</i>
1912-13 (average)	22,677	22,166	97·7
1924	15,545	15,216	97·9
1925	31,222	30,833	98·7
1926	21,934	21,398	97·6

The proportion of British goods is about the same as it was before the war.

Union of South Africa.

The import returns for the Union do not distinguish quantities of piece goods imported, but give the following particulars regarding values :—

Imports of Cotton Piece Goods.

	1910-14. Average.	1924.	1925.	1926.
From—	<i>Th. £.</i>	<i>Th. £.</i>	<i>Th. £.</i>	<i>Th. £.</i>
United Kingdom	1,356·1	3,289·1	3,144·9	2,739·1
Germany	180·1	103·4	102·0	134·0
Italy	47·7	109·8	113·2	131·7
United States..	5·7	389·7	499·4	516·9
Japan	2·1	32·5	70·7	157·0
Total (including Other Countries)	1,663·9	4,113·9	4,207·2	4,021·5

The British share in the total trade has fallen from 81·4 per cent. in 1910-14 to 80·0 per cent. in 1924, 74·8 per cent. in 1925, and 68·1 per cent. in 1926. The United States, from which imports were almost negligible before the war, now figures second after Great Britain, and was the source of 11·9 per cent. of the imports in 1925 and 12·8 per cent. in 1926

Australia.

There are a few cotton mills in New South Wales and Queensland, but the industry has not developed to an important extent, and Australia is very largely dependent upon imported yarns and manufactures. Steps have, however, been taken to promote the growth of the industry. Under the Cotton Bounty Act, 1926, bounties to a total amount not exceeding £60,000 are payable in respect of cotton yarn spun in Australia from raw cotton of which at least half has been grown in Australia. The rates of bounty authorised rise from $\frac{1}{2}$ d. per lb. in the case of "Count" No. 1 to 1s. per lb. upon "Count" No. 41 and higher "Counts." Before the war yarns were imported almost exclusively from the United Kingdom, but since the war a substantial quantity of yarns, mainly mercerised, has been imported from the United States. Thus in the 12 months ended 30th June, 1926, total imports of yarns were valued at £495,000, of which £308,000 were from the United Kingdom, and £185,000 from the United States. Imports of mercerised yarns alone amounted to £183,000 of which £43,000 were from the United Kingdom and £138,000, from the United States. In the piece goods trade British goods have maintained their position relatively to other imports, the relative position being shown in the following Table on the basis of values :—

Percentage Share of United Kingdom and other countries in imports of piece goods (by value).

	1913	1923-24*	1924-25*	1925-26*
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
United Kingdom ..	85.8	88.4	86.6	85.1
Japan	1.1	4.9	6.8	6.7
United States ..	3.1	4.0	3.9	6.0
Other Countries ..	10.0	2.7	2.7	2.2
Total ..	100.0	100.0	100.0	100.0

* Years ended 30th June.

The total value of the imports of piece goods, which included in 1913 some linen goods, was £4,575,000 in 1913, £9,564,000 in 1924, £10,124,000 in 1925 and £9,754,000 in 1926.

The trade is one in which cloth of good quality predominates, as is shown by the high value per square yard of piece goods exported. Some figures bearing upon this are given at the end of the next sub-section relating to New Zealand.

New Zealand.

Great Britain has substantially though not entirely maintained her pre-war position. The New Zealand trade accounts show, on the basis of values, that imports of piece goods were contributed in the following proportions by the principal countries participating in the trade :—

	1910-13. Average. <i>Per cent.</i>	1924. <i>Per cent.</i>	1925. <i>Per cent.</i>	1926. <i>Per cent.</i>
United Kingdom ..	93.2	90.8	87.1	89.1
Japan ..	0.8	3.7	7.0	3.2
United States ..	2.4	2.1	3.8	4.0
Other Countries ..	3.6	3.4	2.1	3.7
Total ..	100.0	100.0	100.0	100.0

Japan and the United States have slightly increased their pre-war proportions of the trade, but their competition can hardly be considered serious. The total value of the imports was £2,000,000 in 1910-13, £2,174,000 in 1926.

The quality of the British goods shipped to New Zealand to be on the whole somewhat higher than that of goods sent to Australia and well above the average for all British piece goods exported. Thus in 1925, the value per 1,000 square yards of bleached goods exported was £41.9 for New Zealand, £40.5 for Australia and £29.7 for all countries. The value of printed piece goods (other than flags handkerchiefs and shawls) was £58.0 for New Zealand, £55.1 for Australia and £39.4 for all countries; and the value of goods dyed in the piece was £64.8 for New Zealand, £56.3 for Australia and £51.0 for all countries.

Canada.

The table overleaf shows the quantity of cotton piece goods imported into Canada on the average of the four years immediately preceding the war, and in each of the last three years.

Imports of cotton goods into Canada have in recent years fallen short of the pre-war quantity. This does not imply an equal falling off in consumption, as the Canadian cotton industry grew considerably during the war. According to the Census of Industry there were produced in Canada in 1923 some 193,000,000 yards of unbleached cotton fabrics, 36,887,000 yards of bleached or white cotton fabrics and 35,310,000 yards of cotton prints. Canada is credited with about 1.2 million spindles and about 35,000 looms.

Years ending 31st March.

	1910-11 to 1913-14. Average.	1924-25.	1925-26.	1926-27.
	Thous. Lin. yds.	Thous. Lin. yds.	Thous. Lin. yds.	Thous. Lin. yds.
<i>Grey Unbleached—Total</i> ..	15,186	15,286	20,362	21,181
From United Kingdom ..	10,757	5,405	7,193	7,717
United States ..	4,420	9,857	13,166	13,449
<i>White, Bleached—Total</i> ..	32,256	10,589	9,616	10,248
From United Kingdom ..	26,189	4,840	3,904	4,014
United States ..	5,769	5,514	5,516	6,054
<i>Printed, Dyed or Coloured—</i>				
<i>Total</i> ..	65,624	49,978	44,383	52,171
From United Kingdom ..	52,654	33,317	26,592	27,765
United States ..	12,130	14,716	15,843	21,543
<i>Grand Total</i> ..	113,063	75,833	74,361	83,600
From United Kingdom ..	89,600	43,562	37,689	39,496
United States ..	22,319	30,087	34,525	41,046

The import statistics make clear that there has been a serious loss of British trade to the United States. While on the average of four pre-war years 79·2 per cent. of imported piece goods came from the United Kingdom, the proportion was reduced to 57·5 per cent. in 1924-25, 50·6 per cent. in 1925-26 and 47·2 per cent. in 1926-27. Imports from the United States increased almost *pari passu*, and in 1926-27 actually exceeded the British trade in quantity. This strengthening of the hold of the United States over the Canadian market has taken place notwithstanding that British goods are favoured by the Preferential Tariff.

British exports to Canada are in the main of good quality, though not of such high quality as British exports to the United States. Thus in 1925 the average value per 1,000 square yards of British bleached goods sent to Canada was £42·5, to the United States £81·6, and to all countries £29·7. Printed goods other than flags, handkerchiefs and shawls were valued at £52·6 for Canada, £96·4 for the United States and £39·4 for all countries; and goods dyed in the piece at £64·7 for Canada, £84·7 for the United States, and £51·0 for all countries.

Mexico.

The following table illustrates the pre-war and post-war position as regards imports of piece goods.

In the pre-war year British goods represented nearly three-quarters of the aggregate square yardage of imports. In 1924 and 1925, on the basis of weight (which may perhaps somewhat under-represent the importance of the British trade) American goods represented over half the total, and British goods little more than one-third. Imports consist mainly of the better qualities of

goods, and Mexico herself manufactures the great bulk of the cotton goods which she consumes.* She is credited with over 800,000 spindles and 37,000 looms.

Analysis of Imports of Cotton Piece Goods into Mexico.

				Fiscal year 1912-13.‡	Year 1924.†	Year 1925 ††
From—				Per cent.	Per cent.	Per cent.
United Kingdom	..	..		72.9	34.0	37.7
United States	..	..		11.7	56.9	53.7
Germany	..	..		4.7	0.8	1.0
Other Countries	..	..		10.7	8.3	7.6
Total	..	..	..	100.0	100.0	100.0

† Percentages based on weight.

‡ Percentages based on square yardage.

The quantity of imports in 1912-13 was 24,953,000 square yards, in 1924, 2,661 metric tons and in 1925 3,769 metric tons.

Brazil

The development of domestic cotton spinning in Brazil is a fact that the volume of imports before the War. Brazil is credited with about 4.5 million spindles and rather more than 66,000 looms.

Comparative figures as to imports of cotton piece goods are given in the following table :—

Imports of Cotton Piece Goods into Brazil.
(In Metric tons.)

From	1910-13 Average.	1924.	1925.	1926
United Kingdom ..	8,567	4,352	5,823	5,883
United States ..	215	559	492	315
Germany ..	1,162	55	90	183
Belgium ..	526	225	56	45
France ..	317	423	367	459
Switzerland ..	106	234	114	154
Spain ..	15	6	1	3
Italy ..	686	172	324	237
Other Countries ..	252	16	61	40
Total ..	11,846	6,042	7,328	7,319

* See International Cotton Bulletin, Jan., 1927, p. 239.

† In the State of Sao Paulo the production of cotton cloth increased from 81,963,000 metres in 1913 to 488,380,000 metres in 1923 and 230,753,000 metres in 1924 (Boletim da Directoria de Industria e Commercio)

On the whole Great Britain has increased her proportionate share of the trade, the percentages being 72·3 per cent. in 1910-13, 72·0 per cent. in 1924, 79·5 per cent. in 1925 and 80·4 per cent. in 1926. The United States has made some progress, as a result doubtless of the special opportunities which she enjoyed during the war. It is noteworthy that neither Italy nor Japan is an important factor in the Brazilian market. Brazil imports cloth of good or fairly good quality which she cannot produce herself and for the production of which Great Britain possesses special advantages. The inferior grades cannot easily surmount the high tariff.

Argentina.

A detailed comparison of pre-war and post-war imports of piece goods into Argentina is given in the following table:—

Imports of Cotton Piece Goods into Argentina.

(In Metric tons.)

		1909-13 Average.	1924.	1925.	1926.
<i>Unbleached—Total</i>	.. ..	2,283	3,074	3,059	2,398
From United Kingdom	.. ..	1,739	1,286	1,207	839
United States	.. ..	62	552	701	551
France	.. ..	10	5	20	18
Germany	.. ..	39	15	18	6
Netherlands	.. ..	3	97	127	110
Belgium	.. ..	43	33	28	13
Italy ..	.. ..	370	193	297	212
Spain	.. ..	14	2	8	3
Japan	.. ..	—	887	652	639
<i>Bleached—Total</i>	.. ..	5,229	7,590	8,965	10,717
From United Kingdom	.. ..	4,366	5,604	6,318	8,160
United States	.. ..	15	307	393	263
France	.. ..	91	51	90	117
Germany	.. ..	146	62	50	103
Netherlands	.. ..	14	58	131	147
Belgium	.. ..	79	340	244	332
Italy ..	.. ..	461	1,026	1,360	1,191
Spain	.. ..	50	95	271	293
Japan	.. ..	—	24	95	97
<i>Printed—Total</i>	.. ..	4,316	2,692	3,206	3,342
From United Kingdom	.. ..	2,786	1,703	1,879	2,038
United States	.. ..	10	98	183	202
France	.. ..	139	115	113	159
Germany	.. ..	562	132	124	112
Netherlands	.. ..	4	38	48	16
Belgium	.. ..	76	70	74	60
Italy ..	.. ..	392	493	749	715
Spain	.. ..	337	34	30	32
Japan	.. ..	1	2	—	1

	1909-13 Average.	1924.	1925.	1926.
<i>Dyed—Total</i>	14,139	16,550	18,124	16,576
From United Kingdom ..	5,393	4,582	5,319	5,498
United States ..	14	1,219	1,507	1,049
France ..	346	359	289	356
Germany ..	1,252	351	318	374
Netherlands ..	31	427	446	429
Belgium ..	1,175	1,716	1,894	2,088
Italy ..	5,593	6,534	7,751	6,148
Spain ..	304	185	215	199
Japan ..	—	142	322	427
<i>Grand Total (including other kinds)</i>	26,805	29,412	33,874	33,499
From United Kingdom ..	14,650	13,401	14,936	16,620
United States ..	106	2,191	2,801	2,078
France ..	706	659	642	797
Germany ..	2,102	585	539	628
Netherlands ..	53	624	755	706
Belgium ..	1,396	2,191	2,262	2,506
Italy ..	6,884	8,308	10,246	8,347
Spain ..	844	324	532	541
Japan ..	1	1,056	1,072	1,168

The total quantity of piece goods imported into Argentina in 1924, 1925 and 1926 was greater than in pre-war years, the increase being, however, confined to bleached, unbleached and dyed cloth. Great Britain has not maintained her share of the trade, for whereas in 1909-13 some 54·7 per cent. of the quantity of piece goods imported came from this country, the percentage fell to 45·6 per cent. in 1924, 44·1 per cent. in 1925, and 49·6 per cent. in 1926. The United States, Netherlands, Belgium, Italy and Japan have gained ground. American competition appears to be most severe in unbleached and dyed cloth; Belgian competition in dyed cloth; Italian competition in dyed and printed cloth; and Japanese competition in unbleached cloth. Germany and Spain have lost ground in the Argentine market since before the war.

It should be added that the cotton manufacturing industry is far less developed in Argentina than in Brazil,* and the tariff on imported cotton goods is lower. It is significant in this connection that Japan, which produces almost exclusively coarse cloth, has a footing in the Argentine but not in the Brazilian market. A comparison of the price per square yard of British piece goods exported to Argentina suggests that they are on the average inferior in quality to the goods sent to Brazil, but in general superior to the average British exports to all countries. Thus in 1925 bleached cloth exported to Argentina

* In 1924, Argentina had only about 30,000 spindles and 1,500 looms

averaged £36·0 per 1,000 square yards, to Brazil £38·9 and to all countries £29·7. Printed cloth other than flags, handkerchiefs and shawls averaged for Argentina £42·9, for Brazil £58·7 and for all countries £39·4; while cloth dyed in the piece averaged for Argentina £51·1, for Brazil £54·1, and for all countries £51·0.

Note on the Working Hours of the Cotton Industry in various Countries.

[Compiled by Cotton Spinners' and Manufacturers' Association, December, 1927.]

Belgium.—Legal 48-hour week, cleaning time extra. Overtime allowed at time-and-a-half rates.

China.—11 hours a day.

Czechoslovakia.—Legal 48 hours, cleaning time extra. Overtime allowed up to 240 hours per annum at time-and-a-quarter rates.

England.—48 hours by agreement, including cleaning. No overtime allowed.

France.—Legal 48 hours, cleaning time not included. Overtime allowed up to 200 hours per annum.

Germany.—Collective agreements to the effect that not more than 10 hours per day are worked. Hours worked 51 to 54. Cleaning time included in working hours. Overtime paid for at 20 per cent. on ordinary rates.

Holland.—Legal 48 hours, but by arrangement 50½ hours are worked.

India.—Legal 60 hours, cleaning time included. An allowance of 6 hours per week is granted when urgent repairs are required. When trade is good two shifts are worked.

Italy.—Legal 48 hours, cleaning time included. Overtime 2 hours per day paid 10 per cent. extra. Two and three shifts are worked and when this is done 46 hours are worked each shift. The effect is that at present the average throughout the trade is 10½ hours a day.

Japan.—Two shifts each of 10 hours per day are worked. 27 days per month.

Switzerland.—Legal 48 hours, but if urgent reasons exist such as foreign competition, the hours may be extended to 52 per week.

UNITED STATES OF AMERICA.

California, Massachusetts, North Dakota, Utah, and District of Columbia.—Legal 48 hours for women and young persons.

Maine, New Hampshire, Rhode Island, Connecticut, New Jersey, New York and Pennsylvania.—Have a legal working week of 54 hours for women and young persons.

South Carolina.—Legal 55-hours week.

Tennessee.—Legal 57-hours week.

North Carolina, Georgia, Virginia.—Legal 60-hours week.

Alabama.—No legal working week.

APPENDIX 3.

Changes of capitalisation in the cotton spinning industry.

In this Appendix, the companies which were refloated with increased share capital during the boom of 1919-20 will be described as "reconstructed" companies; those which increased their share capital either by the issue of bonus shares or by transfer of the undertaking to a new company without effective change of ownership will be described as "recapitalised" companies; and the others will be termed "original" companies. The financial fortunes of typical companies in these three groups have been summarised at various dates in such publications as the "Manchester Guardian" and "Textile Mercury," and in F. W. Tattersall's (Monthly) "Cotton Trade Review." The subject is also discussed in the "Inquiry into the Cotton Industry, 1921-22," published by the United Textile Factory Workers' Association. The following particulars are based partly on such published information, partly on information furnished to the Committee by the Lancashire Shareholders and Loan-holders Protection Society, Limited, and partly on a paper entitled "The Post-war Depression in the Lancashire Cotton Industry," by Professor G. W. Daniels and Mr. J. Jewkes, which was read before the Royal Statistical Society on 17th January, 1928.

Extent of capitalisation changes.

Professor Daniels and Mr. Jewkes give the following table to show the actual extent of the financial reconstitution of spindles, and point out that the aggregate number of spindles affected represented 46 per cent. of the total number of spindles in the industry in 1920.*

		No. of Companies.	Spindles (000's).
"Reconstructed" Companies (Spinning)	..	200	18,956
Ditto (Spinning and Weaving)	.. ..	17	1,490
"Recapitalised" Companies (Spinning)	..	32	2,962
Ditto (Spinning and Weaving)	.. ..	2	490
"Reconstituted"† Companies (Spinning)	..	42	1,956
Ditto (Spinning and Weaving)	.. ..	20	826
Combines (Spinning and Weaving)	.. ..	3	2,093
Total	.. .. .		28,773

* About 14 per cent. of the looms in the industry were affected by financial reconstitution, but these were mainly looms belonging to concerns engaged in both spinning and weaving, or to combines; and among firms engaged in weaving alone, financial reconstitution was negligible.

† The word "reconstituted" is used in these tables because it is not clear whether the companies to which it refers were "reconstructed" or "recapitalised."

The following table from the same source shows how the 217 companies (and their spindles) in the "reconstructed" group were divided between the "American" and "Egyptian" spinning sections.

	No. of concerns.	No. of spindles (000's).
American section	137	11,445
Egyptian	29	3,867
American and Egyptian	40	5,134
Not known	11	
	217	20,446

Similar information is not available for the other companies (numbering nearly 100) including in the former table, but the particulars given show how much more the American section was affected by financial reconstitution than the Egyptian section.

Capital.

Particulars are available for some 310 companies, made up of 210 "reconstructed" companies, owning a total of about 21 million spindles, 35 "recapitalised" companies, with about $3\frac{1}{2}$ million spindles, and 65 "original" companies with about $6\frac{1}{2}$ million spindles. In 1927 the total paid-up share capital of the 65 original companies was about £3½ millions, with loan capital totalling about £3 millions in addition; that of the 35 recapitalised companies* was about £8 millions (as compared with about £1½ millions before the boom), with loan capital totalling about £½ million in addition; and that of the 210 reconstructed companies was about £40 millions, with loan capital of an estimated total of about £25 millions in addition.

Complete particulars of the capital of the companies which were taken over in the formation of the "reconstructed" companies are not available, but on the basis of figures relating to a large sample of these companies, it appears that, on the average, the paid-up capital of the new companies was about $3\frac{1}{2}$ times that of the old companies, and the purchase price of the concerns about eight times the old paid-up capital. The "Inquiry into the Cotton Industry," published by the United Textile Factory Workers' Association, estimates that perhaps half the difference between the purchase price and the new paid-up share capital was obtained by the realisation of assets (including reserves in the form of investments, etc., and in some cases stocks) or out of profits on current contracts; and that the other half was raised by loans to the companies from the promoters, from the public (including employees), from the banks and from the merchants or financial houses connected with the cotton trade. This estimate appears to be consistent with the particulars given above for the group of 210 reconstructed companies.

* About two-thirds of these companies went into voluntary liquidation during the boom, and new companies were formed to take over their businesses, the shareholders receiving partly paid shares in the new companies in exchange for their old shares. In the case of the other companies in the group the capital was increased by the distribution of bonus shares.

No particulars are available as to the amount of the loans held by any of the three groups of companies before the boom. In the "Inquiry into the Cotton Industry" it is assumed (on the basis of particulars for 100 typical companies published in "Tattersall's Cotton Trade Circular") that before the war the loan capital in cotton-spinning companies averaged about 44 per cent of the paid-up share capital, and it is suggested that the amount of loan capital required probably did not rise to any large extent during the war years. If this factor is applicable to the three groups of companies mentioned above, it would appear that the total loans of the reconstructed companies may have increased about five times as a result of the boom, as compared with much smaller relative increases in the other two groups.

Charges.

In the "Inquiry into the Cotton Industry," the pre-war rate of interest on loan capital is taken as 5 per cent. (less income tax); and the normal rate after the boom is stated as 5 per cent. free of income tax, which represented, during the period when income tax was 6s. in the £, a rate of over 7 per cent. less income tax, and, with income tax at 4s. in the £, represents over 6 per cent. Hence the annual amount which has had to be found by the mills since the boom for payment of interest on loans has been increased not only because the total amount of loans has increased, but also because a higher rate of interest has been payable.

The increased capitalisation of the reconstructed companies has also led to an increase in the amount of the depreciation charged year by year before arriving at profits. The usual practice is to set aside annually on account of depreciation certain percentages of the value of (1) buildings, (2) engines, boilers and other similar plant, and (3) running machinery (spindles, etc.). For income tax purposes depreciation is not allowed on buildings, and the percentages allowed on plant and machinery have to be taken on the written-down values each year, thus representing a gradually decreasing sum. In the accounts of the concern, however, the sum set aside annually is generally a fixed one—in the case of plant and machinery usually the amount allowed for income tax purposes in the first year. When for the purpose of reconstruction and recapitalisation the valuation of the property of the companies was written up (without the property itself undergoing any change), the basis of depreciation charges was altered.* For example, material assets which stood in the books of a company at, say, £20,000, might be re-valued at £70,000, with the result that the new company subsequently bore a fixed charge for depreciation $3\frac{1}{2}$ times higher than before.† In estimating the effect of this increase account must, of course, be taken of the fact that, where the increased valuation of assets was adopted after a sale of the assets, a correspondingly increased amount of depreciation on plant and machinery would be allowed as a deduction from profits for income tax purposes.

* Table A, on page 128, shows that the value attached to the land, buildings and plant of the group of reconstructed companies dealt with in the table accounts for nearly the whole of the authorised capital of the companies, thus indicating that the writing-up of assets was concentrated on the material assets (as contrasted with intangible items like "goodwill").

† Similarly, the annual charges for fire insurance, etc., would be increased to the extent that the assets were insured at their increased valuation; and if assessment for local rates was affected, the amount of rates payable would also be increased.

Profits and dividends.

Depression set in before many of the companies whose capital had been increased had had time to reduce the book value of their assets out of profits to a reasonable figure. As will be seen below, the effects of the slump were particularly disastrous in the case of the reconstructed companies. A number of companies have gone into liquidation or entered into schemes of arrangement, and some have found it necessary to seek sanction for a reduction in their capital. Many companies have not paid a dividend for a number of years,* and have been kept going only by further advances from the banks and by the calling-up of uncalled capital† where, as is commonly the case among cotton-spinning companies, the capital was issued partly paid. The latter process, however, is attended by considerable difficulties partly because shareholders (many of whom are cotton operatives or local tradesmen) are loth to pay at all, and partly because in many cases shareholders find the money by calling in loans from the same company or from other companies in a like position. Table A, on page 128 (published in March, 1927), gives particulars as to capital, liabilities and assets of 53 original, 34 re-capitalised and 207 reconstructed companies. The companies included in the three groups are not precisely the same as those in the groups mentioned in the previous section on "Capital" and further referred to below. The table shows that whereas the bank overdrafts of the original and recapitalised companies were under 10 per cent. of the paid-up share capital, the proportion in the case of the reconstructed companies was over 30 per cent.

The table on p. 127 shows the yearly percentage of dividends, etc., to the total paid-up share capital in each year since 1920 for groups of original, recapitalised, and reconstructed companies, respectively, and for the same companies all together. The total number of companies, and the numbers in each group, are not quite the same throughout, but the comparability of the figures is not seriously affected by this circumstance. The total number in 1927 was 310, comprising 65 original, 35 recapitalised, and 210 reconstructed companies. The percentages of dividend are calculated on the capital of all the companies in each case, irrespective of whether they paid dividends or not.

The following table shows the number of companies which paid dividends (in a few cases only preference dividends) in the seven years, 1921-27 :—

				Orig.	Recap.	Reconst.
1921	..	..	..	57	27	103
1922	..	..	..	45	26	57
1923	..	..	..	40	21	31
1924	..	..	..	40	22	34
1925	..	..	..	59	30	65
1926	..	..	..	55	28	62
1927	..	..	..	43	27	31

* About 130 reconstructed companies paid no dividends during the four-year period 1923 to 1926.

† In the seven years 1921 to 1927 calls totalling at least £11 millions were made, of which over £4 millions were in 1927.

Yearly percentages of Dividends.

			Total Number of Companies.	Orig.	Recap.	Reconst.	All.
				Per cent.	Per cent.	Per cent.	Per cent.
1921	..	..	293	13.1	8.4	2.4	4.3
1922	..	..	301	8.9	6.6	1.3	2.7
1923	..	..	310	4.4	6.1	0.7	1.6
1924	..	..	315	4.7	5.8	0.8	1.7
1925	..	..	312	13.25	8.6	2.25	4.0
1926	..	..	312	9.6	7.2	1.3	2.7
1927	..	..	310	7.3	6.1	0.6	1.8
Average for 7 years			—	8.7	6.9	1.3	2.6

TABLE A.

Capital, liabilities and assets of original, recapitalised and reconstructed companies (abstracted from figures published by the Lancashire Shareholders and Loanholders Protection Society, March, 1927).

	Liabilities (in £ millions).					
	Authorised capital.	Subscribed capital.	Called up capital.	Loan-holders.	Sundry creditors.	Reserves.
53 Original companies ..	5.1	4.9	3.4	3.0	0.45	0.25
34 Re-capitalised companies ..	6.0	5.5	5.0	0.7	0.28	0.29
207 Re-constructed companies ..	67.4	62.7	39.7	24.4	5.46	0.91
	78.5	73.1	48.1	28.1	6.19	1.45
						13.35
						2.46
Assets (in £ millions except last column).						
	Debit P. & L.				Credit P. & L.	
	Land, buildings, and plant.	Investments.	Stock in trade.	Sundry debtors.	Cash in bank.	Aggregate.
53 Original companies ..	4.5	0.7	1.2	0.31	0.24	0.41
34 Re-capitalised companies ..	3.7	2.0	1.0	0.25	0.43	0.06
207 Re-constructed companies ..	64.0	0.5	7.0	2.48	0.35	6.66
	72.2	3.2	9.2	3.04	1.02	7.13
						1,803 owing to bank
						2,632 lent to bank
						59,056 owing to bank

Note.—Professor Daniels and Mr. Jewkes (*loc. cit.*) give some figures as to the amount of fixed interest capital carried at the beginning of 1927, which may be compared with the above, viz.:—£3,460,000 loans, overdrafts and debentures for 62 original companies, £494,000 for 28 recapitalised companies, and £28,897,000 for 171 reconstructed companies.

APPENDIX 4.

Charges and Costs in the finishing and Laying Down of Cotton Piece Goods.

The following Tables are annexed :—

Table A.—Summary of particulars contained in the Preliminary Reports of the Third Census of Production as to the bleaching, dyeing and printing of cotton piece goods in 1912 and 1924 (page 133).

Table B.—Particulars submitted to the Committee on Industry and Trade as to the comparison between the price of specified descriptions of grey cloth and the price of bleaching or dyeing, and of laying down, such cloths in 1912 (or 1913) and 1924 (or 1925) (pages 134–5).

Table C.—Percentage costings of a standard bleached shirting, a standard printer (finished) and a standard dhootie, issued by the Cotton Yarn Association in 1927 (page 136).

Finishing Charges.

Amount of Finishing Charges.

The results of the Census of Production (Table A) show that in 1912 the average value of the bleaching of cotton piece goods was $\cdot 31d.$, that of dyeing $\cdot 84d.$, and that of printing $\cdot 94d.$ per linear yard. In 1924, the average values (which, in comparison with those for 1912, reflect not only the increases in finishing prices, but also the changes in the character of the work actually done) were $\cdot 87d.$, $2\cdot 20d.$ and $2\cdot 85d.$ respectively. These average figures, however, cover at each date a very wide range of actual charges for the different finishing processes in particular instances. The following table (compiled from particulars relating to 1914 and 1924 which were submitted to the Committee in evidence) illustrates this variety; and it may be added, as a further illustration, that the average charge for bleaching in 1924 in the case of one organisation undertaking a large volume and range of work was about $\cdot 81d.$ per yard, as compared with the Census figure of $\cdot 87d.$

Class of Goods.	Number of Examples.	Lowest Charge per Linear Yard.		Highest Charge per Linear Yard.		Average Charge per Linear Yard.	
		1914.	1924.	1914.	1924.	1914.	1924.
		<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Bleaching :—							
White Scarves and Dhooties.	6	$\frac{1}{10}$	$\frac{3}{4}$	$\frac{2}{4}$	$\frac{2}{4}$	$\cdot 33$	$\cdot 72$
Mulls	4	$\frac{9}{32}$	$\frac{2}{4}$	$\frac{2}{4}$	$\frac{2}{4}$	$\cdot 33$	$\cdot 70$
Nainsooks	3	$\frac{2}{4}$	$\frac{2}{4}$	$\frac{7}{8}$	$\frac{2}{4}$	$\cdot 21$	$\cdot 44$
Shirtings	5	$\frac{1}{8}$	$\frac{2}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\cdot 42$	$\cdot 98$
Printing :—							
Miscellaneous Examples	5	$\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{16}$	$\cdot 90$	$2\cdot 45$
Dyeing :—							
*Blacks	23	$\frac{1}{2}$	$1\frac{1}{2}$	$3\frac{1}{2}$	$5\frac{1}{2}$	$1\cdot 85$	$3\cdot 22$
*Colours and Blacks ..	26	$\frac{1}{2}$	$1\frac{1}{16}$	$1\frac{1}{16}$	3	$\cdot 82$	$1\cdot 91$
*Colours	21	$\frac{1}{16}$	$1\frac{9}{16}$	$3\frac{1}{2}$	$6\frac{1}{2}$	$1\cdot 73$	$3\cdot 36$
Miscellaneous Examples	18	$\frac{1}{4}$	1	5	12	$1\cdot 17$	$2\cdot 81$
(Turkey Red)							

* The post-war figures in these cases relate to the year 1925.

Ratio of Finishing Charges to Value of Grey Cloth.

It appears from the results of the Census of Production (Table A) that, if it be assumed that there was no marked difference in the average value per linear yard of the cloth submitted to the several processes, the average value of bleaching in 1924 was roughly 13 per cent. of the value of the grey cloth treated, that of dyeing some 33 per cent. and that of printing about 42 per cent. In 1912, the figures were $11\frac{1}{2}$ per cent. in the case of bleaching, 31 per cent. in that of dyeing, and $34\frac{1}{2}$ per cent. in that of printing. As would be expected, however, the ratio borne by the charges of the finishing trades to the value of the grey cloth in particular cases is subject to considerable variation. In the examples given in Table B the charge for bleaching in 1924 and 1925, which in the five examples given averaged 14 per cent. of the grey cloth price, varied from 8 per cent. of the value of mulls to 20 per cent. of that of a shirting to which a filled finish was applied. In the two examples relating to dyeing the ratio of the finishing charge to the value of the cloth was 24 per cent. and 34 per cent. For the pre-war years shown in the Table, the average charge for bleaching in the cases quoted was $13\frac{1}{2}$ per cent. of the grey cloth price, and varied, as in the post-war years, from 8 to 20 per cent., while in dyeing the corresponding figures were 26 and 41 per cent.

The foregoing figures relate to the years 1924 and 1925, since when the price of raw cotton has fallen and with it the cost of cotton cloth.* As the charges of the finishing trades are, of course, not affected by the price of cotton, it is probable that in the more recent years those charges bore a somewhat greater ratio to the cost of grey cloths. The costings issued by the Cotton Yarn Association in December, 1927 (Table C), show that, with cotton futures at $11\frac{1}{2}$ d. a lb., 'printing charges (at $2\frac{1}{2}$ d. a yard) in the case of a standard printer amounted to 59 per cent. of the cost of the grey cloth, and finishing (at $\frac{1}{2}$ d. a yard) and making-up to 14 per cent., the total for those finishing processes being 73 per cent. of the cost of the grey cloth (which in that case appears to have been rather less than 4d. a yard). Similarly in the case of a standard shirting, bleaching, finishing and making up accounted for 17 per cent. of the cost of the grey cloth; while in the case of a standard dhootie the charge for "finishing only" amounted to 2·7 per cent. of the cost of the grey cloth.

Ratio of Finishing Charges to Value of Finished Cloth.

The results of the Census of Production (Table A) indicate that in 1924, on the assumption that there was no marked difference in the average value per linear yard of the cloth submitted to the various finishing processes, and taking the cost of grey cloth plus the finishing charge to represent the cost of finished cloth, the value of bleaching amounted on an average to some $11\frac{1}{2}$ per cent. of the cost of the finished cloth, that of dyeing some 25 per cent., and that of printing some 30 per cent. In 1912 the corresponding figures were, bleaching 10 per cent., dyeing 24 per cent., and printing 25 per cent.

The examples given in Table B indicate that both in 1924 (or 1925) and in 1912 (or 1913) bleaching accounted for from 7 to 17 per cent. of the value of the finished cloth (calculated as explained in the preceding paragraph), and dyeing from 19 to 25 per cent. in the post-war years, and from 21 to 29 per cent. in the pre-war years.

Bleaching, finishing and making-up charges amounted to 14·6 per cent. of the value of the finished cloth (calculated on the same basis) in the case of the standard bleached shirting of which particulars were issued by the Cotton Yarn Association, while in the case of the standard printer the percentages were 33·5 for printing and 7·8 for finishing and making-up. Including packing and shipping charges, the percentages are 13·54, 30·34 and 7·08 respectively.

* See examples quoted in table on p. 137.

The following table indicates that in 1924 bleaching and finishing charges had on an average increased over their pre-war level to approximately the same extent as the average value of bleached piece goods exported, while dyeing charges on an average had increased to a smaller extent than the average value of exported dyed piece goods. It will be seen, however, from the table on page 45 that in the years following 1924 the average values for exported piece goods (bleached or dyed) fell considerably.

Year.	Value per Linear Yard of Exports of White Bleached Cotton Piece Goods. (1913=100.)	Average Level of Bleaching and Finishing Charges. (1913=100.)	Value per Linear Yard of Exports of Cotton Piece Goods Dyed in the Piece (1913=100.)	Average Level of Dyeing Charges. (1913=100)
1921..	298	286	369	385
1922..	225	256	261	293
1923..	212	229	239	260
1924..	223	227	247	225

The results of the Census of Production show that in 1924 the average charge for printing had increased as compared with that in 1912 to a greater extent than had the average charges for bleaching and dyeing. The average value per linear yard of printed cotton piece goods exported was 246 (1913=100) in 1924, and 207 in 1927.

Comparison of Finishing Charges with Spinning and Weaving Costs.

The figures issued by the Cotton Yarn Association (Table C), which are based on cotton futures at 11d. a lb., show that bleaching, finishing and making-up accounted for 13·54 per cent. of the total cost of a standard bleached shirting, while the spinning cost, excluding the raw cotton, amounted to 15·37 per cent., and the weaving cost, excluding the yarn, to 19·24 per cent. In the case of the standard printer (finished), the printing comprised 30·34 per cent. of the total cost, and finishing and making up 7·08 per cent. while the spinning cost was 10·53 per cent., and the weaving cost 14·34 per cent.

In the following comparisons of average finishing costs with the averages of the spinning and weaving costs shown on pages 145 and 146 in "Further Factors in Industrial and Commercial Efficiency," the cost of the materials is again excluded.

Comparison of Costs in the Finishing Trades with Specimen Spinning and Weaving Costs.

(Corresponding pre-war costs = 100 in each case.)

Bleaching and Finishing Average Costs (1923-24)	..	240
Dyeing Average Costs (1924)	.. .. .	220
Printing Average Costs (1925-26)	.. .. .	260
Spinning Costs, American Cotton (excluding cost of cotton)		236*
Spinning Costs, Egyptian Cotton (excluding cost of cotton)		193
Weaving Costs (excluding cost of yarn)	.. .. .	202

While the basis of comparison is slender, these figures suggest that bleaching, dyeing and printing costs in the years referred to had, under the conditions then obtaining, increased over their pre-war level rather more than weaving

* Based on full time working.

costs, or costs of spinning Egyptian cotton. The example of the spinning costs of American cotton being based on full time working, does not presumably reflect the actual increase in such spinning costs generally. The 1925-26 figure of printing costs suggests that in that trade costs, like charges, have been subject to greater increase than in bleaching or dyeing.

Costs in the Finishing Trades.

As stated above the costs of bleaching and finishing as compared with 100 pre-war were 240 in 1923-24, those of dyeing, 220 in 1924 and those of printing, 260 in 1925-26.

The Bleaching Trade Advisory Board supplied the following figures as representing generally the analysis of bleaching costs in the trade as a whole in August, 1925 :—

						<i>Percentage of Total Cost.</i>
Materials	..	..	..	..	..	20-30 per cent.
Wages	..	..	..	..	..	35-45 "
Other Expenses and Overhead Charges	..				..	45-25 "
						<hr/> 100 <hr/>

In dyeing, of the combined cost of materials and labour, wages were stated in 1925 to represent something over one-half, and dyewares and coal together something over two-fifths. In printing, wages are stated to vary between one-third and two-fifths of total cost.

Corresponding information in regard to the costs of these trades in the pre-war period is not available. Figures submitted showing the percentage increases in the main items of cost, however, indicate that wages costs have been subject in the post-war period as compared with the pre-war period to very substantial increases, while material costs also show heavy increases.

It should be remembered that the cost of the cloth does not enter into the costs of the finishing trades, and for that reason their wages and other expenses assume large proportions of the total cost. In bleaching the overhead charges are stated to have ranged from 25 per cent. to 45 per cent. of total cost, and overhead expenses are stated to be very heavy throughout the finishing trades. The relative size of the overhead expenses is a factor of importance, in that, since those expenses are largely fixed charges, the cost per unit of production must tend to rise or fall the more sharply according as the works are more or less fully employed. The results of the Census of Production show that in 1924 the output, in linear yards, of cotton piece goods bleached, but not dyed or printed, was roughly 73 per cent. of the 1912 output; that of cotton piece goods, dyed, but not printed, some 75 per cent. of its 1912 level; and that of cotton piece goods printed, whether dyed or not, approximately 61 per cent. of the output recorded in 1912.*

Laying down Charges.

The figures given in Table B indicate that "laying-down charges"† in 1924 and 1925 accounted for between 5 and 9 per cent. of the cost of the grey cloth bleached, and for 15 per cent. of the grey cloth dyed. The corresponding percentages in 1912 (or 1913) were not substantially different. The costings

* In relation to these figures it should be remembered that, except in so far as new or improved plant has been installed or speeding-up of processes achieved, the potential capacity has been diminished with the reduction of normal working hours between 1912 and 1924.

† Laying down charges are stated to include making-up, casing, examining, railway carriage, interest and bill interest, freight, insurance, etc.

issued by the Cotton Yarn Association in December, 1927 (Table C), show packing and f.o.b. charges and estimated shipper's charges together as amounting to 9·37 per cent. of the total cost of a standard printer cloth, 7·13 per cent. in the case of a standard bleached shirting, and 5·58 per cent. (including in this case making-up) of the total cost of a standard dhootie.

In 35 examples submitted in September, 1925, by the Master Packers' Association the packing charge varied from ·68 per cent. of the value of the goods packed to 2·49 per cent. in individual cases, and on cloths valued at £3,765 12s. 5d. totalled £42 0s. 9d., or roughly 1·1 per cent. As compared with pre-war, packing charges are stated to have increased in July, 1925, by 130 per cent. for baling and by 152 per cent. for casing.

TABLE A.

Summary of particulars contained in the Preliminary Reports of the Third Census of Production as to the Bleaching, Dyeing and Printing of Cotton Piece Goods in Great Britain in 1912 and 1924.

	Quantity.	Net Selling Value.	Average per Linear Yard.
	(1,000 linear yards.)	£	d.
Total manufacture of unbleached grey piece goods of cotton, or of cotton mixed with other ma- terials, including unbleached dhooties and flags, handkerchiefs and shawls in the piece.	1924 4,859,960	*139,621,000	*6·77
	1912 7,284,165	† 82,733,000	†2·73
	Quantity.	Value of Work Done.	Average per Linear Yard.
	(1,000 linear yards.)	£	d.
Cotton piece goods bleached, but not dyed or printed.	1924 1,810,101	6,553,000	0·87
	1912 2,474,224	3,190,000	0·31
Cotton piece goods dyed, but not printed.	1924 943,570	8,670,000	2·20
	1912 1,249,417	4,370,000	0·84
Cotton piece goods printed, whether dyed or not.	1924 790,423	9,340,000	2·85
	1912 1,295,707	5,096,000	0·94

* Of 4,948,164,000 linear yards only.

† Of 7,276,079,000 linear yards only.

TABLE B.

Particulars submitted to the Committee on Industry and Trade as to the comparison between the price of specified descriptions of grey cloth and the price of bleaching or dyeing, and of laying down, such cloths in 1912 (or 1913) and 1924 (or 1925).

Description of Cloth.	Year.	Price of Grey Cloth.	Finishing Charges.	Laying Down Charges.*	Ratio to Price of Grey Cloth of	
					Finishing Charges.	Laying Down Charges.
					Per cent.	Per cent.
Grey Shirting. 36 in. 38/8½ yards 17¼ × 17. 24/26.	1924	Per 50 piece case	Bleaching.	Per 50 piece case	—	5
	1913	£58 6s. 8d.				
	Increase per cent.	£26 11s. 3d. 120				
White Shirting. 36 in. 42 yards 80 × 82. 30/30.	1924	Per 50 piece case	Per 50 piece case	Per 50 piece case	14	6
	1913	£87 5s. 10d. £29 15s. 4d.				
	Increase per cent.	126				
White Shirting. Filled Finish. 35 in. 40 yards. 59 × 56. 34/46.	1924	Per 50 piece case	Per 50 piece case	Per 50 piece case	20	8
	1913	£35 6s. 3d. £14 11s. 8d.				
	Increase per cent.	142				
White Mulls Bleached. 42 in. 20 yards. 19 × 19½. 70e/90e	1924	Per 100 piece case	Per 100 piece case	Per 100 piece case	8	9
	1913	£45 0s. 0d. £23 6s. 8d.				
	Increase per cent.	93				
Cloth. 74 × 78. 32/30. 18½ lb....	1925	Per 40 yards	Per 40 yards†	Per 40 yards	14	9
	1912	£1 3s. 0d. 10s. 7d.				
	Increase per cent.	117				

Cloth. 60 × 66. 34/36. 12½ lb....	1925	Per 40 yards	Per 40 yardst	Per 40 yards	16	9
	1912	16s. 9d.	2s. 8d.	1s. 7d.	16	10
	Increase per cent.	7s. 9d.	1s. 2½d.	0s. 9d.		
Cloth. 19 × 36. 36/36. Finished. 30 in. 30 yards.	1925	Per yard	Dyeing. Per yard	Per yard	34	15
	1912	8d.	2½d.	1½d.	41	20
	Increase per cent.	3½d.	1½d.	1½d.		
Black Italian Cloth, Plain Schrein- ered Finish. 31 in. 30 yards. 98 × 138. 36/40.	1924	Per 30 piece case	Per 30 piece case	Per 30 piece case	24	14
	1913	£35 0s. 8d.	£8 5s. 0d.	£4 15s. 0d.	26	15
	Increase per cent.	£15 1s. 7d.	£3 18s. 8d.	£2 5s. 7d.		
		132	107	108		

* Laying down charges include making-up, casing, examining, railway carriage, interest and bill interest, freight, insurance, etc.
† Including parcelling.

TABLE C.

Percentage Costings of Three Standard Cloths issued by the Cotton Yarn Association in 1927, based on Cotton Futures at 11d. a lb.

	Standard Bleached Shirting.	Standard Printer (finished).	Standard Dhootie.
	Per cent. of total cost.	Per cent. of total cost.	Per cent. of total cost.
Cost of raw cotton and cleaning	42.71	25.23	43.04
Brokerage on raw cotton ..	0.23	0.14	0.25
Spinning wages	8.33	5.50	10.78
Interest and depreciation ..	1.77	1.35	2.63
Expenses	5.27	3.68	7.30
Total spinning cost ..	15.37	10.53	20.71
Yarn agent (1 per cent. on cost)	0.59	0.36	0.65
Weaving wages	14.34	10.64	18.64
Sizing	1.67	1.06	2.16
Interest and depreciation ..	0.48	0.40	0.92
Expenses	2.75	2.24	4.19
Total weaving cost ..	19.24	14.34	25.91
Total to weaving	78.14	50.60	90.56
Cloth agent (1½ per cent. on cost).	1.19	0.77	1.38
Finishing charges	*13.54	*139.26	2.48
Packing and f.o.b.	2.13	3.37	*4.08
Shipper's charges, c a.d. (estimated).	5.00	6.00	1.50
	100.00	100.00	100.00

* Including making-up.

† This figure is composed of the following items:—

Shrinking and calendering	1.84 per cent.
Printing (2½d. per yard)	30.34 "
Finishing (½d. per yard) and making-up ..	7.08 "

APPENDIX 5.

Relative Movements of Raw Cotton, Yarn and Cloth Prices.

The nature of the changes which have taken place since before the war in the price relation of raw cotton, cotton yarn and cotton cloth may be seen from the following figures which show, for each quarter since the beginning of 1924, the price indices of certain kinds of raw cotton, yarns and cloth included in the Board of Trade Index Number of Wholesale Prices. In each column the average prices of the year 1913 are taken as 100.

				Raw Cotton.		Cotton Yarns.		Cotton Cloths.		
				Middling American.	Egyptian F.G.F. Sakellar- Idia.	American.	Egyptian.	38-in. Shirtings, 38 yd. 18 x 18 10 lb.	36-in. Sheetings, 40 yd. 12 lb.	30-in. Drills, 40 yd. 14 lb.
1924—										
1st Quarter	..	..	..	256.9	184.0	248.1	190.0	254.2	238.7	245.5
2nd	..	..	..	251.3	194.1	259.6	197.0	247.9	236.8	251.4
3rd	..	..	..	226.7	206.9	245.5	196.7	238.7	231.6	241.3
4th	..	..	..	194.1	221.1	240.5	212.4	228.0	226.1	227.1
1925—										
1st	..	..	..	194.0	263.8	236.4	244.1	227.2	221.0	225.1
2nd	..	..	..	188.8	261.6	220.7	224.3	217.3	209.4	216.9
3rd	..	..	..	188.7	251.3	206.2	204.6	207.1	207.4	209.2
4th	..	..	..	163.1	175.3	183.0	186.6	188.3	186.9	193.7
1926—										
1st	..	..	..	148.4	144.8	171.1	173.3	177.0	173.0	187.4
2nd	..	..	..	143.3	137.5	162.2	161.0	170.2	164.0	181.0
3rd	..	..	..	137.9	138.5	162.8	153.5	167.4	170.8	183.7
4th	..	..	..	98.6	122.3	137.3	140.5	149.0	157.0	167.2
1927—										
1st	..	..	..	107.3	114.1	132.6	134.0	150.3	152.1	162.1
2nd	..	..	..	123.1	130.6	145.0	145.1	157.2	165.5	170.0
3rd	..	..	..	151.1	161.2	169.7	162.7	175.7	178.2	185.8
4th	..	..	..	159.6	153.1	166.7	159.8	177.3	177.1	183.7

The price of yarn may be regarded broadly as the price of cotton plus the spinning margin, and the price of cloth as the price of yarn plus the weaving margin. Where the index number for yarn is above the index number for raw cotton the implication is, therefore, that the spinning margin has risen in greater proportion than the price of raw cotton, and where the index number for yarn is below the index number for raw cotton the implication is that the spinning margin has risen in smaller proportion than the price of raw cotton. A similar statement may be made *mutatis mutandis* regarding the relation of yarn and cloth prices as bearing upon the weaving margin, the comparison in this case being between American (not Egyptian) yarn and the three kinds

of cloth quoted. The figures suggest that the spinning margin in the case of American cotton has (except in the first quarter of 1924) been consistently higher, relatively to 1913, than the price of raw American cotton. This holds too of Egyptian cotton, except during the period from the third quarter of 1924 to the third quarter of 1925 when the price of Egyptian cotton was very high. The weaving margin rose on the whole proportionately less than the price of yarn up to the middle of 1925, but later, when yarn prices were reduced, the weaving margin did not fall in proportion.

To trace the actual movements in spinning and weaving margins, it would be necessary to establish quantitative relations between raw cotton, yarn and cloth, i.e. to know the quantity of raw cotton required to make a given quantity of yarn and the quantity of yarn required to make a given quantity of cloth. Further it would be necessary to know the value of the saleable waste produced in spinning and weaving. The relation between a particular quantity of raw cotton and a particular quantity of yarn is fairly simple and can be closely estimated. As between yarn and cloth on the other hand, the relation is more complicated, since cloth is composed of two or more kinds of yarn, and the amount of "size" applied to the twist or warp yarn constitutes a further difficulty. Accordingly, attention will here be confined to the question of the spinning margin for certain kinds of yarn, and no attempt will be made to show the course of the weaving margin.

The estimate of spinning charges on pp. 139-40 is based upon figures published weekly in "Cotton," the official organ of the Manchester Cotton Association, showing the price per pound of 32's cop twist yarn, in conjunction with the price per pound of "futures" American cotton for delivery in the current month; and also the price per pound of 60's cop twist yarn, in conjunction with the price of "futures" Egyptian cotton for delivery in the current month.

It was stated in evidence by the Federation of Master Cotton Spinners that in the spinning of medium counts from American cotton wastage would not exceed 14 or 15 per cent. This means that approximately 117 lb. of cotton are required to produce 100 lb. of yarn. Allowance must, however, be made for the saleable part of the waste. The Census of Production of 1924 showed that unmanufactured cotton waste sold by spinning mills represented 3 per cent. of the net selling value of the yarns produced; i.e. in the spinning of 100 lb. of yarn, waste is produced equal in value to at least 3 lb. of yarn, which would be equivalent to the price of about 5 lb. of raw cotton. Thus, taking into account the value of saleable waste, it may be reckoned that 112 lb. of American cotton are required for 100 lb. of yarn.

As regards Egyptian cotton, it has been estimated* that 100 lb. of cotton are required to produce 85 lb. of 54's weft yarn; i.e. 117.6 lb. of raw cotton = 100 lb. of 54's weft yarn. To produce 60's cop twist the quantity of raw cotton required might be slightly higher. About one-quarter of the wastage is said to represent dead loss through evaporation, and of the rest part would be saleable. It seems likely that allowing for saleable waste the amount of cotton required to produce a given quantity of 60's cop twist would be about the same as the quantity of cotton required to produce 32's cop twist from American cotton. Taking it that in each case 112 lb. of raw cotton go to 100 lb. of yarn, the course of spinning margins per lb. of American and Egyptian yarn may be estimated as follows.

* See Official Report of the International Cotton Congress held in Egypt, 1927, p. 98.

(a) *American Cotton and Yarns.*

				Price of 1 lb. 32's cop Twist.	Price of Current month's "futures" American Cotton.		Estimated Spinning Margin per 1 lb. yarn.
					Per 1 lb.	Per 1·12 lb.	
				d.	d.	d.	d.
1913—							
1st Quarter	..	..		10·51	6·67	7·47	3·04
2nd	"	..	..	10·50	6·54	7·32	3·18
3rd	"	..	..	10·42	6·64	7·44	2·98
4th	"	..	..	10·79	7·14	8·00	2·79
Year's Average ..				10·56	6·75	7·56	3·00
1924—							
1st Quarter	..	..		26·24	18·23	20·45	5·79
2nd	"	..	..	27·19	17·56	19·67	7·52
3rd	"	..	..	25·55	15·59	17·46	8·09
4th	"	..	..	24·54	13·32	14·92	9·62
Year's Average ..				25·88	16·18	18·13	7·75
1925—							
1st Quarter	..	..		23·65	13·32	14·92	8·78
2nd	"	..	..	21·75	12·75	14·27	7·48
3rd	"	..	..	20·56	12·85	14·39	6·17
4th	"	..	..	18·01	10·52	11·78	6·23
Year's Average ..				20·99	12·36	13·84	7·15
1926—							
1st Quarter	..	..		16·81	10·03	11·23	5·58
2nd	"	..	..	16·01	9·50	10·64	5·37
3rd	"	..	..	15·89	9·20	10·30	5·59
4th	"	..	..	13·19	6·71	7·52	5·67
Year's Average ..				15·47	8·86	9·92	5·55
1927—							
1st Quarter	..	..		12·99	7·22	8·09	4·90
2nd	"	..	..	14·52	8·32	9·32	5·20
3rd	"	..	..	17·16	10·47	11·73	5·43
4th	"	..	..	16·78	10·68	11·96	4·82
Year's Average ..				15·36	9·17	10·27	5·09

(b) *Egyptian Cotton and Yarns.*

				Price of 1 lb. 60's cop Twist Yarn.	Price of Current month's "futures" Egyptian Cotton.		Estimated Spinning Margin per 1 lb. Yarn.
					Per 1 lb.	Per 1.12 lb.	
1913—				d.	d.	d.	d.
1st Quarter	..	..		17.32	9.83	11.01	6.31
2nd	"	..		17.41	9.77	10.94	6.47
3rd	"	..		17.41	9.53	10.67	6.74
4th	"	..		17.85	9.96	11.16	6.69
Year's Average ..				17.50	9.77	10.95	6.55
1924—							
1st Quarter	..	..		34.81	21.31	23.87	10.94
2nd	"	..		36.19	21.84	24.47	11.72
3rd	"	..		36.35	22.62	25.35	11.00
4th	"	..		39.23	25.07	28.08	11.15
Year's Average ..				36.64	22.72	25.44	11.20
1925—							
1st Quarter	..	..		44.69	32.42	36.31	8.38
2nd	"	..		41.92	29.32	32.84	9.08
3rd	"	..		37.96	27.07	30.32	7.64
4th	"	..		35.00	19.28	21.59	13.41
Year's Average ..				39.89	27.02	30.26	9.63
1926—							
1st Quarter	..	..		31.46	16.69	18.69	12.77
2nd	"	..		28.73	15.43	17.28	11.45
3rd	"	..		28.04	15.43	17.28	10.76
4th	"	..		26.54	13.21	14.80	11.74
Year's Average ..				28.69	15.19	17.01	11.68
1927—							
1st Quarter	..	..		25.15	13.14	14.72	10.43
2nd	"	..		26.95	15.08	16.89	10.06
3rd	"	..		30.75	18.78	21.03	9.72
4th	"	..		29.83	17.56	19.67	10.16
Year's Average ..				28.17	16.14	18.08	10.09

In connexion with these figures it should be observed that the assumption has been made that wastage of cotton in spinning has been the same in the last few years as it was before the war. If it were found that the pre-war wastage were less than the post-war wastage, the spinning margin for 1913 as estimated above would require to be widened to some extent, and in the opposite case it would require to be reduced. It should also be mentioned that no account is taken of any "points on" which a spinner may pay for the cotton which he buys.

The spinning margin in the case of American cotton appears to have been reduced by nearly 2½d. per lb. between 1924 and 1926, in which year it was about 85 per cent. above the level of 1913. In the first quarter of 1927 the margin fell further to a figure 63 per cent. above the level of 1913, but in the second and third quarter it again widened, no doubt to a considerable extent in consequence of the action taken by the Cotton Yarn Association. The reduction of the margin to a figure 61 per cent. above the level of 1913 in the fourth quarter of 1927 reflects the suspension of price fixing arrangements by the Association. In the case of Egyptian cotton the margin averaged, in 1924, 71 per cent., in 1925, 47 per cent., and in 1926, 78 per cent., above the level of 1913. During 1927 the margin has fallen, the average for the year being 54 per cent. above the level of 1913.

The American spinning margin is obviously higher relatively to the level of 1913 than the Egyptian spinning margin, although the Egyptian section is admittedly more prosperous than the American section. Whether the two sections were doing equally well in 1913 does not appear from the figures.

APPENDIX 6.

Miscellaneous Statistics.

TABLE 1.

Imports of Raw Cotton Retained in the United Kingdom.

(In Thousands of lb.)

1800-4	..	..	56,089	1880-4	..	..	1,475,834
1805-9	..	..	63,915	1885-9	..	..	1,470,452
1810-4	..	..	76,008	1890-4	..	..	1,534,889
1815-9	..	..	118,268	1895-9	..	..	1,578,341
1820-4	..	..	152,202	1900-4	..	..	1,579,766
1825-9	..	..	205,665	1905-9	..	..	1,885,746
1830-4	..	..	280,913	1910-3	..	..	2,007,805
1835-9	..	..	374,442				
1840-4	..	..	514,942	1920	..	..	1,692,748
1845-9	..	..	555,264	1921	..	..	1,047,067
1850-4	..	..	707,024	1922	..	..	1,401,883
1855-9	..	..	883,516	1923	..	..	1,244,948
1860-4	..	..	697,078	1924	..	..	1,488,969
1865-9	..	..	905,700	1925	..	..	1,819,540
1870-4	..	..	1,253,716	1926	..	..	1,654,177
1875-9	..	..	1,234,843	1927	..	..	1,501,465

TABLE 2.

Approximate numbers of spindles and looms in the United Kingdom (as given in Worrall's Cotton Spinners' and Manufacturers' Directory for Lancashire).

<i>Year.</i>				<i>Spindles.</i>	<i>Looms.</i>
1885..	..	..	..	41,298,110	546,048
1890..	..	..	..	41,417,379	606,585
1894-5	..	..	..	43,186,657	627,585
1900..	..	..	..	42,640,201	648,820
1905..	..	..	..	45,972,951	652,166
1910..	..	..	..	57,731,829	741,197
1911..	..	..	..	58,002,435	741,260
1912..	..	..	..	58,140,220	758,712
1913..	..	..	..	58,481,031	786,205
1914..	..	..	..	59,317,187	805,452
1920..	..	..	..	60,079,394	798,083
1921..	..	..	..	60,053,246	790,399
1922..	..	..	..	59,812,303	799,000
1923..	..	..	..	59,818,670	795,244
1924..	..	..	..	59,510,867	791,674
1925..	..	..	..	59,902,954	788,197
1926..	..	..	..	60,285,298	786,309
1927..	..	..	..	60,465,082	767,524

TABLE 3.

*Number of Persons engaged in the Cotton Industry in Great Britain,
according to the Censuses of Population.*

Year.				Males.	Females.	Total.
1851	..	..	..	265,000	305,000	570,000
1861	..	..	..	224,000	298,000	522,000
1871	..	..	..	200,000	303,000	503,000
1881	..	..	..	192,000	328,000	520,000
1891	..	..	..	216,000	346,000	562,000
1901	..	..	..	199,000	345,000	544,000
1911	..	..	..	236,000	384,000	620,000
1911	..	..	..	257,000	388,000	646,000
1921	..	..	..	234,000	386,000	621,000

The figures for 1851, 1861 and 1871 are partly estimated and must be taken with some reserve. The classification adopted in the censuses for those years was somewhat wider than that in subsequent censuses prior to 1921, and the figures shown in the above table have been obtained by reducing the actual census figures proportionately to the reduction effected through the new classification in 1881. For the year 1911 two sets of figures are shown, the first being comparable with the figures for the earlier years, and the second being comparable with the figures for 1921, in which year a further new classification was employed.

For statistics showing the numbers of insured persons (under the Unemployment Insurance Acts) in the industry in each of the years 1923 to 1927, see p. 307.

TABLE 4.

Number of Persons employed in Cotton Factories in the United Kingdom.

(Based on official returns obtained from textile factories.)

Year.				Males.	Females.	Total.
1839	..	..	..	112,941	146,395	259,336
1847	..	..	..	134,091	182,236	316,327
1850	..	..	..	141,501	189,423	330,924
1856	..	..	..	157,186	222,027	379,213
1861	..	..	..	182,556	269,013	451,569
1870	..	..	..	178,397	271,690	450,087
1874	..	..	..	187,626	291,895	479,515
1878	..	..	..	185,472	297,431	482,903
1885	..	..	..	196,378	307,691	504,069
1890	..	..	..	208,187	320,608	528,795
1895	..	..	..	205,230	333,653	538,883
1898	..	..	..	197,701	328,406	526,107

TABLE 5.

*Numbers of Spinning Firms and Weaving Firms in Lancashire, 1884 and 1911.**A. Firms Spinning only, in Lancashire and District.*

Spindles.	Number of Firms in 1884.				Number of Firms in 1911.			
	Joint Stock in Origin.	Other Companies.	Private Firms.	Total.	Joint Stock in Origin.	Other Companies.	Private Firms.	Total
2,500	—	—	22	22	2	3	14	19
5,000	1	—	20	21	5	3	7	15
7,500	—	—	27	27	1	6	7	14
10,000	1	1	31	33	2	6	7	15
15,000	9	2	66	77	13	12	17	42
20,000	3	3	71	77	14	7	12	33
25,000	6	1	44	51	15	6	5	26
30,000	9	1	36	46	23	11	7	41
35,000	3	1	28	32	12	3	4	19
40,000	8	2	18	28	10	7	4	21
45,000	7	3	21	31	11	8	2	21
50,000	6	2	19	27	14	6	3	23
60,000	15	2	24	41	25	11	3	39
70,000	16	—	23	39	25	10	1	36
80,000	18	1	16	35	39	12	3	54
90,000	4	—	6	10	37	4	3	44
100,000	4	2	1	7	51	5	2	58
110,000	4	—	5	9	32	3	1	36
120,000	3	—	4	6	26	4	—	30
130,000	2	—	—	2	12	1	—	13
140,000	—	1	3	4	7	2	—	9
150,000	—	3	2	5	4	—	1	5
160,000	—	—	1	1	6	2	—	8
170,000	—	—	—	—	5	3	—	8
180,000	1	—	1	2	1	1	—	2
190,000	—	1	1	2	2	—	—	2
200,000	—	—	—	—	2	3	—	5
210,000	—	—	—	—	2	1	—	3
220,000	—	—	—	—	—	1	—	1
230,000	—	—	1	1	1	2	—	3
240,000	—	—	—	—	1	—	—	1
250,000	—	—	—	—	1	—	—	1
260,000	—	—	1	1	—	—	1	1
Over 260,000	—	1	1	2	7	2	—	9
Total	120	27	493	639	408	145	104	657

B. Firms Weaving only, in Lancashire and District.

Looms.	Number of Firms in 1884.				Number of Firms in 1911.			
	Joint Stock in Origin.	Other Companies.	Private Firms.	Total.	Joint Stock in Origin.	Other Companies.	Private Firms.	Total.
25	—	—	5	5	—	—	2	2
50	—	—	24	24	—	1	15	16
75	—	—	18	18	1	3	16	20
100	—	—	21	21	5	3	21	29
150	—	2	52	54	4	15	49	68
200	—	—	50	50	6	14	36	56
250	—	—	49	49	6	10	32	48
300	—	—	42	42	11	22	22	55
350	4	—	44	48	8	18	29	55
400	—	—	28	28	10	28	18	51
450	5	—	33	38	14	17	14	45
500	2	1	22	25	7	12	14	33
600	10	1	43	54	34	31	29	94
700	3	1	28	32	15	20	22	57
800	1	—	18	19	12	6	23	41
900	1	1	13	15	12	7	13	32
1,000	—	—	5	5	7	12	10	29
1,100	2	—	7	9	9	7	19	35
1,200	1	1	3	5	—	9	8	17
1,300	—	1	5	6	6	6	3	15
1,400	—	—	—	—	3	2	1	6
1,500	—	—	2	2	3	3	—	6
1,600	—	—	—	—	1	4	3	8
1,700	—	—	1	1	3	3	1	7
1,800	—	—	1	1	—	3	1	4
1,900	—	—	3	3	2	2	3	7
2,000	—	—	1	1	1	2	2	5
2,100	—	—	—	—	1	1	2	4
2,200	—	1	1	2	2	—	—	2
2,300	—	—	—	—	1	1	1	3
2,400	—	—	—	—	—	2	1	3
2,500	—	—	—	—	—	—	—	—
2,600	—	—	—	—	—	—	—	—
2,700	—	—	—	—	—	2	—	2
Total	29	9	519	557	184	261	410	855

TABLE 6.
Exports of Cotton Yarns, Thread and Piece Goods from the United Kingdom during the periods 1820-1913 and 1920-27.

Yearly Average for	Cotton Yarns.		Finished Thread.		Cotton Piece Goods.						
	Th. lb.	£'000.	Th. lb.	£'000.	Grey Un-bleached.	White Bleached.	Printed.†	Dyed in the Piece.	Coloured Cottons.	Total Quantity.†	Total Value.
	Th. lb.	£'000.	Th. lb.	£'000.	Th. Linear yds.	Th. Linear yds.	Th. Linear yds.	Th. Linear yds.	Th. Linear yds.	Th. Linear yds.	£'000.
1820-24	26,428	2,718	—	—	142,008	—	—	151,258	—	293,266	13,518
1825-29	46,331	3,563	—	—	178,424	—	—	168,547	—	346,971	12,409
1830-34	70,248	4,549	—	—	257,390	—	—	218,427	—	475,817	12,873
1835-39	99,029	6,615	—	—	326,372	—	—	303,245	—	629,617	15,405
1840-44	131,605	7,264	—	—	500,991	—	—	347,242	—	848,233	15,391
1845-49	140,528	6,687	—	—	675,500	—	—	431,295	—	1,106,795	17,088
1850-54	143,096	6,652	4,571	—	945,672	—	—	596,947	—	1,542,619	22,322
1855-59	183,206	8,593	4,917	—	1,370,206	—	—	797,587	—	2,167,793	30,502
1860-64	123,698	8,502	4,980	—	1,338,221	—	—	739,762	—	2,077,983	36,745
1865-69	151,042	13,555	6,190	—	1,769,167	—	—	874,492	—	2,643,659	50,832
1870-74	205,477	15,364	8,031	—	2,408,743	—	—	1,036,767	—	3,445,510	54,855
1875-79	232,281	12,652	11,024	—	2,621,492	—	—	1,048,292	—	3,669,784	49,877
1880-84	248,883	13,051	14,646	—	3,122,186	—	—	1,370,828	—	4,492,964	55,330
1885-89	251,890	11,620	18,353	2,761	3,438,907	—	—	1,394,589	—	4,833,496	50,826
1890-94	235,888	10,311	17,332	3,010	2,166,225	1,243,929	954,474	610,329	4,974,957	50,569	
1895-99	242,151	9,250	26,783	3,962	2,194,425	1,293,968	992,900	718,058	5,139,351	48,501	
1900-04	161,790	7,897	31,321	3,713	2,012,754	1,415,611	978,790	888,220	5,295,375	56,689	
1905-09	216,708	12,448	27,847	4,284	2,159,558	1,660,777	1,087,231	1,094,050	6,001,616	73,149	
1910-13	217,353	15,057	22,679	3,885	2,164,193	1,889,202	1,259,276	1,081,482	6,672,737	89,774	
1920	147,432	47,586	22,188	14,370	911,500*	1,454,000*	1,105,000*	1,057,000*	4,790,000	317,416	

1921	..	145,895	23,925	15,028	8,461	899,451	983,351	534,669	501,487	133,255	3,052,213	137,883
1922	..	201,953	26,475	17,561	7,782	1,435,207	1,319,065	665,770	739,917	172,911	4,392,870	143,153
1923	..	145,017	21,011	17,933	7,278	1,219,475	1,292,324	778,140	820,451	233,926	4,344,316	138,922
1924	..	163,056	27,782	18,096	6,963	1,402,275	1,413,185	748,718	858,046	182,867	4,625,092	154,091
1925	..	189,531	30,501	18,365	7,616	1,303,130	1,521,974	800,773	831,825	202,722	4,660,424	151,380
1926	..	168,527	21,781	19,048	7,202	1,121,619	1,284,720	611,699	751,792	171,614	3,941,444	116,608
1927	..	200,502	23,594	18,159	6,425	1,215,500*	1,326,000*	670,000*	832,200*	176,700*	4,220,400*	109,986

* The linear yardage of piece goods exported was not ascertained in 1920, and has not yet been published for 1927. The figures given are estimates based on the square yardage.

† With a view to making the figures comparable over the whole period, printed flags, handkerchiefs and shawls not in the piece have been included throughout (except in 1927 for which data are not yet available), although in the published Trade Accounts they ceased to be included with piece goods after 1912. For this reason the figures here given differ slightly from those shown elsewhere in this chapter.

TABLE 7.

Exports of Cotton Yarns from the United Kingdom to the Principal Regions of the World during the Period 1820-1911.
(From Messrs. Ellison & Company's Annual Review of the Cotton Trade.)

Year.*	Europe (except Turkey).		Turkey and Egypt.		British East Indies.		China, Japan, Java, etc.		Other Countries.		Total.
	Million lb.	Per Cent.	Million lb.	Per cent.	Million lb.	Per cent.	Million lb.	Per cent.	Million lb.	Per cent.	Million lb.
1820	22.0	95.6	0.5	2.2	—	—	—	—	0.5	2.2	23.0
1830	56.0	86.7	1.5	2.3	4.9	—	—	7.6	2.2	3.4	64.6
1840	91.9	77.5	3.3	2.8	16.1	13.6	1.8	1.5	5.4	4.6	118.5
1850	90.7	69.0	4.7	3.6	21.0	16.0	3.1	2.4	11.9	9.0	191.4
1860	116.0	58.8	19.6	9.9	30.7	15.6	8.8	4.5	23.2	11.2	197.8
1870	93.7	49.9	14.2	7.6	31.0	16.5	20.8	11.1	28.0	14.9	187.7
1880	95.1	44.1	12.4	5.8	47.1	21.8	46.4	21.5	14.7	6.8	215.7
1880-84 (average)	126.9	50.7	18.8	7.5	46.0	18.6	40.1	16.3	17.1	6.9	248.9
1885-89	131.8	52.3	24.6	9.8	50.3	20.0	35.1	13.9	10.1	4.0	251.9
1890-94	114.7	48.7	33.2	14.0	46.2	19.5	30.0	12.7	11.8	5.1	235.9
1895-99	117.8	48.6	29.5	12.2	46.9	19.4	30.6	12.6	17.4	7.2	242.2
1900-04	82.4	50.9	19.7	12.2	31.8	19.6	9.2	5.7	18.9	11.7	162.0
1905-09	126.0	57.8	17.5	8.2	38.3	17.8	8.7	4.1	26.2	12.1	216.7
1910-11	128.2	61.7	11.0	5.3	33.8	15.7	2.6	1.2	33.2	16.0	207.8

* From 1820 to 1880 data relate to the year specified. After 1880 the figures are quinquennial averages, except as regards the last period, for which the figures represent a two-years' average.

TABLE 8.

Exports of Cotton Piece Goods† from the United Kingdom to the Principal Regions of the World during the Period 1820-1911.
(From Messrs. Ellison & Company's Annual Review of the Cotton Trade.)

Year.*	Europe (except Turkey).		Turkey, Egypt and Africa		America (U.S.A.).		United States.		British East Indies.		China, Japan, Java, etc.		Other Countries.		Total.
	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.	Per Cent.	Million Yds.
1820	127.7	50.9	9.5	3.8	56.0	22.3	23.8	9.5	14.2				19.7	7.8	250.9
1830	137.4	30.9	40.0	9.0	140.8	31.7	49.3	11.1	56.9				20.2	4.5	444.6
1840	200.4	25.4	74.6	9.4	278.6	35.2	32.1	4.1	145.1	18.3	29.9		29.9	3.8	790.6
1850	222.1	16.4	193.9	14.3	360.4	26.5	104.2	7.7	314.4	23.1	104.3		58.9	4.3	1,358.2
1860	200.5	7.5	357.8	13.4	527.1	19.7	226.8	8.5	825.1	30.8	324.2		214.7	8.0	2,676.2
1870	294.6	9.1	670.5	20.6	594.5	18.3	103.3	3.2	923.3	23.4	478.2		188.4	5.8	3,252.8
1880	365.1	8.1	588.6	13.1	651.6	14.5	77.9	1.7	1,813.4	40.3	632.0		367.7	8.2	4,496.3
1880-84 (average)	390.6	8.6	579.2	12.8	729.2	16.2	67.2	1.5	1,772.5	39.3	634.0		343.0	7.6	4,515.7
1885-89	395.5	8.2	590.0	12.2	758.0	15.6	45.0	0.9	2,068.5	42.8	742.3		234.3	4.9	4,838.6
1890-94	310.1	6.2	690.0	13.8	804.1	16.1	56.9	1.2	2,106.0	42.3	745.7		262.5	5.3	4,975.3
1895-99	286.0	5.6	750.6	14.6	784.4	15.3	62.2	1.2	2,090.1	40.6	816.4		351.0	6.8	5,140.7
1900-04	282.4	5.3	830.9	15.7	735.4	13.9	62.5	1.2	2,203.2	41.6	836.6		344.8	6.5	5,295.8
1905-09	322.3	5.4	753.7	12.5	690.1	11.5	75.1	1.3	2,406.5	40.0	1,021.5		733.2	12.3	6,002.4
1910-11	405.1	6.4	742.9	11.7	764.6	12.0	58.9	1.0	2,447.9	38.7	980.4		936.2	14.3	6,336.0

* From 1820 to 1880 data relate to the year specified. After 1880 the figures are quinquennial averages, except as regards the last period, for which the figures represent a two-years' average.

† These figures include certain quantities of "mixed" piece goods (i.e. goods partly of cotton and partly of other material) which are not included in Table 6.

TABLE 9.

*Number of Cotton Spindles in the World, as estimated by Messrs. Ellison & Co.
for the period 1881-1911.*

(In Thousands, i.e. 000's omitted.)

		United Kingdom.	Continent of Europe.	United States.	East Indies.	Total.
1881-84 (average)	..	41,525	22,062	12,309	1,704	77,600
1885-89	..	42,936	23,620	13,560	2,415	82,531
1890-94	..	44,878	26,420	15,218	3,450	89,966
1895-99	..	45,060	30,360	17,230	4,159	96,809
1900-04	..	46,640	33,830	21,403	5,035	106,908
1905-09	..	52,140	36,460	25,862	5,509	119,971
1910-11	..	56,250	41,000	28,820	6,225	132,295

TABLE 10.

Total Number of Spinning Spindles in certain countries on 1st March (from 1920, 1st February) in the years 1911-14 and 1923-27 as estimated by the International Federation of Master Cotton Spinners and Manufacturers' Associations.

(In Thousands, i.e. 000's omitted.)

	1911.	1912.	1913.	1914.	1923.	1924.	1925.	1926.	1927.
Great Britain ..	53,859	55,165	55,576	55,972	56,613	56,724	56,710	57,404	57,548
Russia ..	7,397	7,567	7,526	7,481	7,246	7,246	7,246	7,246	6,946
Poland ..	1,000	1,000	1,200	1,400	1,200	1,024	1,146	1,209	1,412
Germany ..	10,300	10,599	10,920	11,405	9,500	9,382	9,500	10,300	10,900
Netherlands ..	465	454	471	500	638	692	727	853	994
Belgium ..	1,322	1,372	1,469	1,518	1,673	1,698	1,764	1,829	1,892
France ..	7,200	7,400	7,400	7,400	9,600	9,600	9,374	9,446	9,522
Switzerland ..	1,485	1,407	1,398	1,384	1,519	1,515	1,528	1,529	1,523
Spain ..	1,853	1,853	2,200	2,000	1,813	1,813	1,813	1,813	1,817
Italy ..	4,215	4,622	4,580	4,600	4,560	4,570	4,635	4,750	4,941
Austria ..	4,687	4,718	4,864	4,941	1,023	1,023	1,051	1,025	1,041
Czechoslovakia ..	95,151	97,558	99,002	100,012	3,502	3,470	3,459	3,520	3,590
Total, Europe*	28,500	29,523	30,579	31,520	100,389	100,232	100,421	102,391	103,653
United States ..	855	855	855	860	97,225	97,740	97,886	97,844	97,374
Canada ..	600	700	700	750	1,076	1,076	1,156	1,171	1,154
Mexico ..	1,000	1,100	1,200	1,400	770	770	805	826	834
Brazil ..	30,955	32,178	33,334	34,530	1,680	1,700	1,720	2,356	2,551
Total, America	6,196	6,300	6,400	6,397	40,751	41,286	41,567	42,197	41,913
India ..	2,095	2,177	2,250	2,415	7,331	7,928	8,313	8,510	8,714
Japan ..	1,200*	1,100*	1,200*	1,350*	4,754	4,351	5,110	5,447	5,680
China ..	9,491*	9,577*	9,850*	10,162*	2,552	3,380	3,350	3,350	3,433
Total, Asia	—	—	—	—	14,637	15,659	16,773	17,307	17,827
Other Countries ..	135,597	139,313	142,186	144,704	254	300	1,143	1,077	1,223
Grand Total ..	—	—	—	—	155,981	157,477	159,904	162,972	164,616

* Including Other Countries.

TABLE 11.

Number of Mule Spindles and Ring Spindles in certain countries on 1st February, 1927, as given by the International Federation of Master Cotton Spinners' and Manufacturers' Associations.

(In Thousands, i.e. 000's omitted.)

	Mule Spindles.	Ring Spindles.	Total.	Percent- age of Mule Spindles.
Great Britain	43,933	13,615	57,548	76·8
Russia	2,598	4,348	6,946	37·4
Poland	439	973	1,412	31·1
Germany	4,965	5,935	10,900	45·5
Netherlands	243	751	994	24·4
Belgium	455	1,437	1,892	24·1
France	3,854	5,668	9,522	40·5
Switzerland	763	760	1,523	50·1
Spain	624	1,193	1,817	34·3
Italy	749	4,192	4,941	15·2
Austria	417	624	1,041	40·0
Czechoslovakia	1,752	1,838	3,590	48·8
Total, Europe* ..	61,165	42,488	103,653	59·0
United States	2,588	34,786	37,374	6·9
Canada	206	948	1,154	17·8
Mexico	5	829	834	0·6
Brazil	3	2,548	2,551	0·1
Total, America ..	2,802	39,111	41,913	6·7
India	971	7,743	8,714	11·1
Japan	35	5,645	5,680	0·7
China	—	3,433	3,433	—
Total, Asia ..	1,006	16,821	17,827	5·6
Other Countries ..	123	1,100	1,223	10·1
Grand Total ..	65,096	99,520	164,616	39·5

* Including Other Countries.

TABLE 12.

Estimated total number of Looms in existence in certain countries in 1925, extracted from the "Textile Recorder Year Book, 1926."

Country.	Looms.	Country.	Looms.
Great Britain	788,200	United States	762,800†
Russia	202,000*	Canada	34,700*
Poland	35,000	Mexico	36,900*
Germany	240,700†	Brazil	65,700
Netherlands	49,000		
Belgium	29,400	Total, America	900,100
France	181,900		
Switzerland	27,300		
Spain	70,000	India	151,500*
Italy	130,000	Japan	64,500*
Austria	14,000	China	22,500*
Czechoslovakia	125,000		
		Total, Asia	238,500
		Other Countries	33,300
Total, Europe §	1,945,700	Grand Total	3,117,600

* 1924. † 1923.

‡ U.S. North, 1924, 436,600 ; U.S. South, 1925, 326,200.

§ Including Other Countries.

TABLE 13.

Total number of Looms in existence in certain countries in 1906, 1914 and 1926.
[Extracted from Tattersall's "Cotton Trade Review" for 31st December, 1926.]

	1906.	1914.	1926.
Great Britain	650,000	805,000	786,300
United States	515,000	696,000	760,100
Germany	230,000	230,000	240,700
France	106,000	108,000	182,500
Italy	110,000	140,000	139,000
India	50,000	94,000	154,250
Japan	7,500	25,400	74,000
China	2,200	4,500	26,000

TABLE 14.

*World's Cotton Mill Consumption : All Kinds of Cotton.**(Years ending 31st August in pre-war years and 31st July in post-war years.)*

Thousands of Running Bales.

	1909-10 to 1912-3. average	Year 1912-3.	1923-4.	1924-5.	1925-6.	1926-7.
<i>Europe</i>	11,671	12,146	8,074	9,598	10,232	10,303
Of which—						
United Kingdom ..	3,945	4,274	2,718	2,235	3,022	3,010
Germany	1,730	1,700	972	1,211	1,148	1,478
France	988	1,010	1,063	1,122	1,179	1,182
Russia	2,326	2,508	597	1,084	1,752	1,477
Italy	902	790	942	1,002	1,037	939
Austria	828	837	133	136	159	146
Czechoslovakia ..	*	*	417	484	477	497
Spain	335	358	366	352	407	390
Belgium	232	257	296	305	353	363
Poland	†	†	179	209	190	319
Netherlands ..	83	85	56	136	152	162
Switzerland ..	92	98	101	108	114	108
<i>Asia</i>	3,642	3,766	5,973	6,509	6,635	7,372
Of which—						
Japan	1,475	1,589	2,337	2,459	2,816	2,851
British India ..	2,167	2,177	2,065	2,440	2,064	2,601
China	†	†	1,571	1,610	1,755	1,920
<i>America</i>	5,261	5,399	6,292	7,014	7,610	7,963
Of which—						
United States ..	5,139	5,786	5,612	6,127	6,395	7,134
Canada	122	113	152	161	211	201
Mexico	†	†	149	193	222	184
Brazil	†	†	379	533	782	444
<i>Countries not specified</i> ..	1,063	1,121	91	173	204	244
<i>Grand Total</i>	21,637	22,932	20,430	23,294	24,681	25,882

* Included with Austria.

† Included with Russia.

‡ Included with countries not specified.

TABLE 15.

*World's Cotton Mill Consumption, according to kinds.**(Years ending 31st August in pre-war years and 31st July in post-war years.)*

Thousands of Running Bales.

	American Cotton.			East Indian Cotton.			Egyptian Cotton.			Sundries.		
	1925-26 to			1925-26 to			1925-26 to			1925-26 to		
	Year	1926-27.	Average.	Year	1926-27.	Average.	Year	1926-27.	Average.	Year	1926-27.	Average.
Europe ..	3,306	6,579		323	1,085		772	748		2,245	1,855	
Of which—												
United Kingdom ..	3,667	2,085		54	125		392	380		161	428	
Germany ..	1,355	1,049		188	188		110	55		47	21	
France ..	806	830		95	161		80	103		29	86	
Russia ..	487	331		21	1		87	60		1,913	1,223	
Italy ..	571	698		175	219		19	51		25	20	
Czechoslovakia ..	—	377		—	83		—	22		—	5	
Spain ..	285	296		34	63		20	22		19	17	
Belgium ..	171	192		82	143		1	3		3	20	
Other countries ..	6,901	8,174		3,074	4,300		165	216		1,279	2,324	
Of which—												
Japan ..	425	1,007		993	1,663		16	40		155	123	
India ..	94	180		2,081	2,101		1	5		1	46	
United States ..	5,553	6,526		—	29		134	148		32	61	
Grand Total ..	14,507	14,753		3,897	5,385		937	964		3,524	4,179	

STATISTICS.

TABLE 16.
Exports of Cotton Yarns and Thread from the Principal Countries, 1902-13.
(In Millions of £.)

	From United King- dom.	From Germany	From Belgium.	From France.	From Switzer- land.	From Spain.	From Austria- Hun- gary.	From United States.	From Japan.	From India.	Total.	Percent- age from U.K.
1902	11.03	1.55	0.40	0.15	0.59	0.03	0.25	—	2.04	5.69	21.73	50.8
1903	11.41	1.59	0.51	0.18	0.64	0.04	0.32	—	3.22	5.89	23.80	47.9
1904	12.37	1.46	0.53	0.27	0.58	0.06	0.44	0.03	3.00	6.54	25.28	45.9
1905	13.70	1.67	0.44	0.76	0.55	0.06	0.42	0.06	3.40	8.26	29.32	46.7
1906	15.86	1.57	0.53	0.74	0.67	0.07	0.50	0.07	3.62	6.93	30.56	51.9
1907	20.36	1.85	0.62	0.75	0.67	0.06	0.66	0.07	3.11	5.98	34.13	59.7
1908	17.19	1.79	0.58	0.38	0.51	0.05	0.45	0.08	2.12	6.45	29.60	58.1
1909	16.55	2.40	0.61	0.40	0.49	0.06	0.45	0.11	3.24	6.47	30.78	53.8
1910	17.53	2.68	0.79	0.59	0.62	0.10	0.61	0.09	4.65	5.75	33.41	52.5
1911	19.64	2.90	0.75	0.58	0.66	0.12	0.78	0.12	4.12	5.06	34.73	56.6
1912	20.13	3.14	0.95	0.66	0.68	0.15	1.05	0.12	5.50	6.61	38.99	51.6
1913	18.46	2.99	0.90	0.93	0.66	0.14	2.06	0.15	7.27	6.55	40.11	46.0

TABLE 17.
Exports of Cotton Manufactures from the Principal Countries, 1902-13.
 (In Millions of £.)

	From United Kingdom.	From Russia.	From Germany.	From Belgium.	From France.	From Switzer- land.	From Spain.	From Italy.	From Austria- Hungary.	From United States.	From Japan.	From India.	Total.	Percentage from U.K.
1902	60.97	1.82	11.19	1.30	6.94	5.89	1.11	1.96	0.66	6.02	0.77	0.98	99.61	61.2
1903	61.76	2.21	13.25	1.50	7.15	6.25	1.21	2.66	0.84	5.82	0.95	1.09	104.69	59.0
1904	71.04	2.22	15.11	1.76	8.29	6.04	1.50	3.53	1.17	3.69	1.15	1.22	116.75	60.8
1905	77.79	2.17	16.99	1.96	10.05	6.80	2.02	3.30	1.45	9.21	1.63	1.36	134.75	57.7
1906	83.21	2.62	18.67	2.21	12.11	7.69	1.76	4.24	2.31	9.53	2.22	1.18	147.75	56.3
1907	89.56	2.27	19.24	2.36	13.92	8.98	2.20	4.58	2.74	5.10	2.37	1.20	154.51	58.0
1908	77.42	2.16	15.29	2.18	11.11	7.48	2.12	3.60	1.66	3.58	2.04	1.24	129.88	59.6
1909	76.43	2.47	13.21	2.60	13.12	8.60	2.51	4.44	1.74	5.13	2.30	1.47	134.02	57.0
1910	87.74	2.66	15.03	3.12	12.95	9.28	1.96	5.48	2.40	4.95	2.94	1.59	150.10	58.5
1911	99.80	3.38	16.02	3.15	13.20	9.85	2.06	7.21	2.83	6.07	3.28	1.46	168.31	59.3
1912	101.47	3.99	17.30	3.69	15.18	10.03	2.18	6.25	2.99	7.74	3.65	1.52	175.99	57.7
1913	108.00	4.64	18.62	3.42	15.21	9.62	1.85	8.26	3.57	7.71	4.65	1.33	186.88	57.8

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CHAPTER II.

THE WOOL TEXTILE INDUSTRY.

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THE WOOL TEXTILE INDUSTRY.

I. INTRODUCTORY AND HISTORICAL.

The wool textile industry has been extensively carried on in this country from remote times. Making use of wool sheared from native sheep, it was for many centuries the largest English manufacturing industry, and only since the Industrial Revolution have certain other industries—amongst them the cotton industry—surpassed it in the number of workpeople engaged, and in the value of output.

Scope of the industry.

The wool textile industry is primarily concerned with the weaving of wool, but it is commonly taken to include also the earlier stages of wool preparation and spinning, and the later finishing processes (when carried on in close connection with weaving)—all of which are essential to the production of fully manufactured cloth. These activities are, accordingly, included within the scope of this account. The carpet industry (but not the hosiery industry which is based upon a special knitting process) may also conveniently be regarded as a highly specialised branch of the wool textile industry, notwithstanding that it makes use of large quantities of materials such as jute, cotton, linen and hemp, in addition to woollen and worsted yarns.

While the industry is occupied in working up primarily wool of sheep or lambs, it is convenient to regard it as including also the working up of certain other kinds of wool or hair akin to sheep's or lambs' wool. These include mohair (the hair of the angora goat), camel hair, and the hair of the alpaca, llama, and vicuna. The raw materials of the industry include (in addition to new wool) "mungo," made by tearing up or pulling rags and tailors' clippings of cloth; and "shoddy," made similarly from soft woollen rags and stockings. In addition, considerable quantities of cotton are used in the wool textile industry for mixing with wool in the production of yarns; while the weaving process makes use to an important extent of yarns of materials other than wool—notably cotton, silk and artificial silk yarns.*

Division into woollen and worsted branches.

The industry is divided into two branches—the woollen and the worsted—differentiated both by the type of material used and by the processes of manufacture. Broadly, the medium and lower grades of wool are used in the woollen branch, while merino and fine

* See Chapter on Artificial Silk, p. 279.

crossbred wools are used in the worsted branch. Mungo and shoddy are used exclusively in the woollen branch, and some cloths may contain very little else. They are, however, not necessarily the cheapest or the worst quality of wool, and they are used to some extent in the manufacture of woollens of fairly good quality. In the woollen branch, yarns may be made from wool mixed with cotton, but in the worsted branch such mixing of wool and cotton is practically confined to hosiery yarns. In the weaving of worsted cloth, however, cotton and other textile yarns may be used, e.g. there may be a cotton warp and a worsted weft.

The principal difference between woollen and worsted manufacture lies in the preparation and spinning of the wool, the object being in the case of the worsted to produce a yarn in which all the fibres are as near as possible parallel, while in the case of woollen yarns the individual fibres lie in all different directions. In each case the process is a complicated one, involving the use of elaborate and ingenious machinery, but the only processes which need be mentioned here are "carding" and "combing." The "carding" machine transforms the raw wool (after cleaning, scouring, etc.) into a very flimsy lap almost of gossamer-like nature wherein all the threads are roughly parallel. This lap is then divided into narrow strips, which are each condensed in the machine (by a rubbing process) into continuous threads, and rolled into balls. The subsequent processes for woollen and worsted production are different. In the former case the loose thread, after passing through one or two other machines (for drawing it, etc.) is spun into woollen yarn and the yarn woven into cloth. But if the thread is intended for the worsted process it passes in addition through a special combing machine which separates the long wool or "tops" from the short wool or "noils." The "tops" then pass through a further process of being "drawn" before being spun into yarn, while the "noils" are disposed of to the woollen branch of the industry.

While there is some broad resemblance between the processes in the woollen and worsted branches, the preliminary stages of worsted manufacture are much more complicated and delicate than those of woollen manufacture, and the differences subsequent to carding and as far as spinning are such that completely different equipment is required. In weaving, however, it is possible to adjust looms to take either woollen or worsted yarn.

Generally speaking, the woollen and the worsted branches of the industry are differently organised. In the woollen branch it is quite common for a single firm to carry on all the processes from the preparation of the raw material to the weaving and frequently the dyeing and finishing of the cloth.* In the worsted branch, on the

* It was stated in evidence that in the woollen branch of the industry about half the dyeing and finishing is done by manufacturers.

other hand, many firms confine themselves to a single process, the organisation being broadly as follows :—

- (a) *Wool buyers.* These buy wool and resell to the top-makers or combers. Many top-makers and combers, however, are also wool merchants.
- (b) *Top-makers and combers.* Top-makers buy wool, sort it into different qualities and blend it as required for production of the desired "top." They then have it scoured and combed "on commission" by the combers, who deliver it in the form of tops. In this form it is placed on the market and sold either direct to the worsted spinner or to the merchant, who disposes of the tops to the spinner in this country or exports them. For the service of combing a fixed schedule of charges exists. In some cases the combers themselves act as top-makers, buying the wool, passing it through the various processes and disposing of the resulting tops. The wool-combing section is the bottle neck of the worsted industry, and at times considerable difficulty has been experienced by spinners, particularly during busy periods, in obtaining sufficient "tops" for them to turn into yarn.
- (c) *Spinners.* These convert the "tops" into yarns by means of drawing and spinning processes.
- (d) *Warpers and sizers.* These warp and size the yarns (on a commission basis) before weaving.
- (e) *Manufacturers.* These weave the yarn into the various fabrics.
- (f) *Dyers and finishers.* These scour, dye and finish the cloth as required. This section of the trade works mainly on a commission basis.

The reasons for the remarkable difference between the organisation of the woollen and worsted branches appear to be partly historical and partly technical or commercial *

Worsted spinning tended to be established as a distinct industry, because it lent itself in a way that woollen did not to the process of frame spinning invented by Arkwright, and thus came to be carried on in specialised mills. Again, since the patents for machine combs (invented about the middle of last century) were often exploited by the patentees, combing, both at home and abroad, was from the outset in the hands of firms which worked on commission for spinners. As the woollen manufacturer's success depends very largely upon the skilful composition of his yarn (which may include re-worked wool

* See "The Woollen and Worsted Industries," by J. H. Clapham.

or cotton, as well as new wool), it is generally thought desirable for him to make it himself. This reason for combining spinning and weaving does not apply to the same extent on the worsted side; and as the variety of yarns which the worsted weaver uses is apt to be very great, extending to silk and cotton yarn, he would in any case have to buy part of his yarns.

The distinction between the "vertically" organised woollen branch and the sectionally organised worsted branch is, however, far from being absolute. There are firms organised vertically in the worsted branch; though these are confined in the main to special lines of production, notably the mohair and alpaca branches, where the material requires to be combed and sorted in a very special way before being spun. On the other hand, the woollen branch comprises many firms which limit their operations to one or two processes.

Concentration of the industry.

The wool textile industry was at one time carried on, so far as the spinning process in particular was concerned, in almost every part of the country. During the later middle ages it became largely concentrated in certain areas, of which the West Riding of Yorkshire was one. Early in the 18th century the West Riding began rapidly to gain ground relatively to the other centres; and this process continued until the supremacy of the West Riding became, as it remains, assured. With the example of the Lancashire cotton industry before its eyes, the West Riding proved itself to be much less reluctant than the other centres to substitute machinery for hand processes. Another advantage lay in its proximity to coal and iron, abundance of cheap coal in particular being a great advantage in generating both the motive power necessary to drive the machinery, and the heat required to maintain the temperature of the spinning mills—especially the woollen spinning mills—at the level most favourable to spinning, i.e. about 65°F.*

In the Eastern counties the industry has now long been practically extinct. The worsted branch (associated with the village of Worstead in Norfolk, subsequently carried on extensively in Norwich, and introduced into Yorkshire probably at the end of the 17th century) is now carried on almost exclusively in the West Riding. The woollen branch remains more scattered, though this too has its main centre in the West Riding. The "West of England" district, now but a shadow of its former self as a wool manufacturing area,

* It was claimed in evidence given to the Committee on behalf of the West Riding Group of Chambers of Commerce that the West Riding possesses, in the humidity of its atmosphere, a natural advantage especially for the spinning of crossbred yarns. In countries with a dry atmosphere, the required humidity has to be obtained by artificial means.

remains celebrated for its woollen cloths, including high-grade uniform cloths and specialities such as billiard table cloths. The Border districts of Scotland are famous for their " tweeds " and fine woollens as well as for hosiery. Other districts in which the woollen industry is carried on include Rochdale (blankets and flannels); Dolgelly and Welshpool in Wales (flannels); Witney in Oxfordshire (blankets); and Leicestershire (mainly worsted spinning and hosiery). The carpet-making industry is carried on largely in the Kidderminster district and also in and around Halifax and Glasgow.

Table 1, p. 270, shows the distribution of the wool textile industry as ascertained at the Census of 1921; and it will be seen that of 120,534 persons in Great Britain engaged in the worsted branch no less than 112,376, or 93·2 per cent., were in the West Riding; while of 139,158 persons engaged in the woollen branch 94,578, or 67·9 per cent., were in the West Riding. In carpet making the West Riding accounts for only 29·6 per cent. of the persons engaged.

Within the West Riding area itself there is a large amount of specialisation as between different localities. To a certain extent the woollen and worsted branches are concentrated in separate districts, though the separation is by no means complete. The worsted branch is located mainly in and around Bradford, Halifax and Keighley—to the West and North; while the woollen branch is located mainly about Leeds, Batley, Dewsbury and Morley—to the East and South. In Huddersfield both branches are carried on, some of the best worsteds for men's wear and some fine woollens being produced. The Colne Valley above Huddersfield specialises on cheaper kinds of woollen goods, while Dewsbury and Batley specialise mainly on still lower qualities in which shoddy plays a large part. Leeds produces a somewhat wide variety of woollen goods, together with a considerable amount of worsted yarns and cloth. Bradford is the centre of wool combing and of the manufacture (together with Halifax) of worsted dress goods for women's wear, and is the principal commercial centre of the industry, though it is naturally more concerned with worsteds than with woollens.

Numbers employed and growth of production.

Tables 2, 4 and 5 on pp. 271-5 show respectively the number of persons occupied in the woollen and worsted industry in Great Britain (excluding carpets and rugs) at each Census from 1851 to 1921; the number of spindles, looms, etc., in woollen and worsted factories in the United Kingdom at various dates between 1850 and 1918; and the quantities of wool and other raw material imported into, exported from, and retained in the United Kingdom from 1775 to 1927. Although the particulars in the three tables are not on quite the same basis, they are sufficiently comparable to enable approximate

conclusions to be obtained by bringing together the figures for similar dates ; and the following table has been constructed for this purpose :—

Year.	Numbers occupied.‡	Year.	Number of		Year.	Total wool, etc., retained.	
			Spindles.	Looms.			
	'000		'000	'000	Average.	Mill. lb.	
1851	.. 254	1850	.. 2,471	42	1850-4	..	241.0
1861	.. 235	1862	.. 3,472	64.8	1860-4	..	312.3
1871	.. 263	1870	.. 4,958	115.5	1870-4	..	453.5
1881	.. 252	1881 (est.)	6,200†	144	1880-4	..	496.5
1891	.. 275	1890	.. 6,574	131.5	1890-4	..	622.2
	248	1911 (est.)	7,600†	110	1909-13	..	845.9
1911	(old classification)						
	.. 281						
	(new classification)	1918	.. 8,023	114.6	1919-23	..	816.6*
1921	.. 280				1924-27	..	608.9*

* See pages 169-170.

† These estimated figures, being obtained by interpolation, may involve a considerable margin of error.

‡ These figures relate to Great Britain, but the omission of Ireland does not materially affect the comparison with the figures in the other columns. The corresponding number of persons in Ireland declined from 7,500 in 1881 to 4,600 in 1911.

In addition to the qualifications mentioned below which affect the interpretation of the table, it must also be remembered that the figures in the last column represent the total quantity of wool and other similar material retained in the United Kingdom for all purposes, and not merely that available for use in the wool textile industry.

It will be seen that the numbers occupied in the industry remained about the same throughout the period covered by the table.† During the same period the number of spindles, the number of looms and the quantity of material shown in the table have all increased roughly three-fold. Thus there has been a great increase in the output per person occupied, consequent on the introduction of new methods of operation and organisation.

One aspect of increased efficiency was the substitution of factory work for domestic work. Factories had been organised in the industry long before the great mechanical inventions of the 18th

† The industry is largely dependent on female labour ; and, while the number of males occupied exceeded the number of females in 1851 and 1861, the number of females was greater than that of males in 1871 and at each subsequent Census, the numbers in 1921 being 115,000 males and 145,000 females. Similarly in the carpet section there were in 1921 14,000 females as against 10,000 males.

and early 19th centuries, and they are therefore not to be regarded initially as a consequence of machine production ; but the introduction of new and expensive equipment driven by steam greatly stimulated the factory industry. Table 3, p. 272, shows the numbers of persons employed in woollen and worsted factories in the United Kingdom at various dates between 1839 and 1907.* As the figures relate only to factories regulated by the Factory Acts, they may be affected in the earlier years by extensions in the scope of the Acts. They suggest that a great increase took place between 1850 and 1870 in the number of persons employed in factories. Between 1870 and 1880 factory work had become general, though hand-loom weavers remained a not unimportant body and did not finally become negligible in number until the end of the century.

Not only has the industry become a factory one but, within the factory, production has been increased by the introduction of improved machinery and increased speed of operation. For example, carding machines have been very greatly improved ; and, whereas Table 4 shows a decrease in the total number of these machines comparing 1918 with 1870, the fact is that there were probably 25 per cent. more threads on the 6,145 carding machines of 1918 than there were on the 13,430 carding machines of 1870. In the case of spinning spindles in woollen factories, an increased output per unit has been brought about by using larger apparatus and to some extent increasing the speed of the machinery. It is, however, in the case of looms that the figures as to numbers installed at different dates require the greatest qualification. The table indicates a decrease in the number of looms since 1878, but the great reduction has been in the narrow looms, particularly those which before and up to 1904 were devoted to the production of dress goods. The displacement of narrow by broader looms obviously increases productive capacity ; and a comparison of the width of looms in 1904 and 1918 shows a decline in the number of narrow looms and an increase in those of greatest width. There has also been an increase in the speed of looms in some sections of the weaving trade ; for example, whereas in 1878 a loom running at the rate of 50 picks per minute was the standard type, the 100-pick loom is now the characteristic loom of the Yorkshire tweed trade. This increase in speed has also taken place to some extent in the fine worsted trade, though not in ordinary worsted weaving.

In conjunction with the improvement in machinery, it is relevant to glance at the growth in the power equipment of the wool textile industry as revealed by the Censuses of Production of 1907, 1912 and 1924. The total capacity of engines at the factories increased from 319,175 horse power in 1907 to 356,411 horse power in 1912

* It will be seen from the table that the number of females exceeded the number of males in factories from the earliest date given in the table.

(exclusive in this year of engines at factories employing less than six persons), and 441,293 horse power in 1924. In the last year 13 per cent. of the capacity was in reserve or idle. The capacity of electric generators was returned as 18,734 kilowatts in 1907, 34,045 kilowatts in 1912 and 73,716 kilowatts in 1924. The capacity of electric motors driven by electricity generated by engines at the factories was returned as 18,941 horse power in 1912 and 66,109 horse power in 1924. The returns show further that there were motors driven by purchased electricity aggregating 11,966 horse power in 1912 and 76,011 horse power in 1924 (some 11 per cent. being in reserve or idle in the latter year). A corresponding figure for 1907 is not available.

Relative development of different sections.

A feature of interest in the statistics of machinery in Table 4, p. 273, is the relative movement in the woollen and worsted branches. Regarded over the whole period 1850 to 1918, the number of worsted spindles has increased relatively to the number of woollen spindles, and this applies to the period since 1874 (when the factory system may be regarded as general) as well as to the earlier years. In the case of power looms, on the other hand, the position is different. Over the period 1850 to 1904, the number of looms in woollen factories tended to rise relatively to the number of looms in worsted factories ; and there is reason to believe that, if woollen and worsted looms could be distinguished in 1918, it would be found that this tendency had continued.

The numbers of persons employed in woollen and worsted factories respectively in various years between 1839 and 1898 are shown in Table 3, p. 272. During the earlier decades, both woollen and worsted factories advanced rapidly in numbers of workpeople, the rate of increase up to about 1874 being greater in worsted than in woollen. In the following years up to 1898 the figures show no striking difference between the woollen and the worsted branch, but a comparison of the figures for 1898 and the Census returns of 1921 indicates an increase in that period in the number of woollen workers relatively to worsted workers.

Regarding the relative development of the spinning and weaving branches, the figures in Table 4 suggest that worsted spinning has greatly developed relatively to worsted weaving, while woollen spinning and woollen weaving show no similar disparity. The figures cannot be taken as conclusive on these points in the absence of any indication as to the relative rate at which improvements were effected in spinning and weaving machinery. The suggestion which they contain, however, is supported by other evidence, notably the statistics of exports, which will be examined later.

Supplies of raw material.

The provision of plentiful and cheap supplies of raw material is of vital importance to the industry, and the problems connected with the production and distribution of wool are somewhat intricate. Some discussion of the subject will be found in Appendix I, page 230. It will be seen from Table 5, p. 275, that whereas, until the end of the 18th century, the industry obtained practically all its supplies of raw wool from the native clip, in the 19th century the dependence upon imported wool rapidly increased. The home clip is estimated to have increased almost continuously up to the 70's, after which there was a falling off; and in view of the continued advance in British exports of wool (though these included not only wool from British sheep, but also some imported wool scoured in this country), the retained part of the home clip appears to have fallen substantially. Another feature of the table is the very great increase in the quantity of mungo and shoddy estimated to have been consumed in the United Kingdom between the middle of last century and the outbreak of the Great War.

The aggregate quantity of wool of all kinds available for consumption increased throughout the period 1775 to 1909-13, with only one break (in 1900-04) in the continuity of the advance.

The amount available for consumption in the post-war period compares as follows with the quantity available in the last quinquennium before the war:—

(In Millions of lb.)

				Foreign and Colonial Wool (including mohair and alpaca).	Home Grown Wool (estimated quantities).	Recovered Wool (incl. wool from rags and imported sheepskins).	Total.
1909-13 (average)	..	..	..	506·2	94·8	244·9	845·9
1919	..	..	..	910·5	97·1	216·6	1,224·2
1920	..	..	..	670·5	85·9	143·7	900·1
1921	..	..	..	448·4	66·8	118·4	633·6
1922	..	..	..	695·9	42·0	95·7	833·6
1923	..	..	..	356·9	44·1	90·7	491·7
1924	..	..	..	428·3	52·3	91·8	572·4
1925	..	..	..	408·3	56·0	80·1	544·4
1926	..	..	..	484·6	60·2	112·8	657·6
1927	..	..	..	506·9	56·5	97·9	661·3
1919-27 (average)	..	..	..	545·6	62·3	116·4	724·3

It will be seen that, for the years since the war, imports of wool show great variations, partly attributable to the bringing in (in 1919 and the three subsequent years) of supplies accumulated in Australia and elsewhere during the war. This wool, in so far as it was retained in the United Kingdom, did not all pass immediately into consumption. It was gradually put on the market by the British Australian Wool Realisation Association ("Bawra"), an organisation formed in 1920 to market the Government stocks of Australian and New Zealand wool and the new clip from those countries, with a view to avoid the glutting of the market.

If account were taken of the amounts of wool put on the market by "Bawra," the quantities of raw material available for consumption in each of the years 1920 to 1924 would be somewhat different from those shown in the preceding Table, being diminished in 1920 and 1921 and increased in 1922-24. Even thus modified, however, the figures for individual years would not necessarily represent the quantities of raw material actually manufactured in the respective years. It is known that in 1921 and 1922, when prices were low, large stocks were bought, and some of this cheap wool was carried over for manufacture in the years 1923-24.

The aggregate amount of wool of all kinds available for consumption in 1919-27 averaged 724 million lb. annually, a reduction of over 14 per cent. compared with the average in 1909-13.

There has been a drop in the consumption of recovered wool, etc., (due largely to reduced importation of rags from Russia, Germany and other continental countries) from 245 million lb. as the average of 1909-13 to 116 million lb. as the average of 1919-27, a reduction of about 52 per cent.* On the other hand, the consumption of sheep's and lambs' wool (including mohair and alpaca, the supplies of which were diminished) remained practically unchanged, being estimated at an average of 601 million lb. in 1909-13 and 608 million lb. in 1919-27. The figures indicate a considerable change in the character of the trade, resulting in a loss of business to those engaged in the manufacture of lustre goods and low-grade heavy woollens.

Course of overseas trade.

Exports of British woollen and worsted manufactures have for centuries been of great importance. Towards the close of the 17th century they are said to have represented nearly two-thirds of the general exports of the country.† With the growth of other

* From Table 5, page 275, it will be seen that there has also been a decline in the consumption of mohair, alpaca, etc.

† Lapson—History of the English Woollen and Worsted Industries, p. 3.

branches of trade, wool textiles have become relatively less important. Exports of woollen and worsted yarns and manufactures represented in value, on the average of the five years immediately preceding the war, between nine and ten per cent. of British exports of manufactured goods, and some 7.5 per cent. of the value of all British exports.

The general course of the import and export trade since 1853 in wool tops, woollen and worsted yarns and in some important classes of manufactures is shown in Table 6, p. 276.

The trade in tops is preponderantly an export trade, and the figures show that this trade grew rapidly in the twenty years preceding the war.

The yarn trade showed on the whole up to 1913 a simultaneous development of imports and exports, exports being always at least twice as great as imports. Since the war, imports of yarns have been reduced absolutely and relatively to exports.

The two right-hand columns of the table show that exports of manufactured goods have also as a rule greatly exceeded imports. During the 90's, it is true, imports grew to represent more than half the value of the exports, and this position lasted until after the years 1900-04. But in 1905-08 and 1909-13 exports increased substantially in value while imports diminished, with the result that in 1909-13 exports were more than three times as valuable as imports. During the post-war years the ratio of imports to exports has been smaller than it was before the war, but the proportion increased yearly from 1922, and by 1927 the ratio prevailing in 1909-13 was almost re-established.

As regards exports of the separate classes of manufactures, the years preceding the war witnessed a falling-off rather than an increase in the volume of trade compared with the 70's and 80's of last century. Exports of carpets, flannels and blankets attained a maximum in 1885-89, and in each case the figures for the years immediately preceding the war were lower. In the case of woollen and worsted tissues, exports reached a maximum (323,970,000 yards) in 1870-74, from which point they fell steadily to 153,900,000 yards in 1900-04, though they rose again slightly thereafter. A striking feature is a rapid increase in the exports of woollen tissues since 1890-94 combined with a continued decrease in exports of worsted tissues. Investigation reveals (a) that the falling-off in exports of these latter goods is reflected in the figures of shipments to practically all the most important markets, and (b) that the decline is almost confined to a particular class of worsteds, namely stuffs, dress goods, linings, lastings, etc., whether of pure wool or of wool mixed with other materials.

This latter feature is clearly seen from Table 7 on page 277, which shows that, comparing the average of 1890-94 with that of 1909-13, the exports of "worsted stuffs, etc.," declined by about 59½ million

linear yards out of a total decline in exports of worsted tissues amounting to about 61 million linear yards. The decline in exports of worsted "stuffs" is a feature of long standing, as will be seen from the following table:—

Annual Average Exports of	1870-74.	1875-79.	1890-94.	1909-13
	(Millions of linear yards)			
Worsted stuffs, etc., all wool ..	26.4	17.7	14.8	8.2
Ditto mixed	260.0	191.8	99.7	47.0

As the exports are recorded in linear yards, it is necessary to take account of the width of the tissues, and the table on p. 277 shows that between 1890-94 and 1909-13 there was a marked change over from narrow to broad tissues. Thus the apparent decline in the quantity of worsted tissues exported must be considerably discounted, while the increase in exports of woollen tissues was in reality greater than shown by the figures. On a general consideration, however, of the course of exports of woollen and worsted tissues, and of carpets, flannels and blankets as already set out, the conclusion can scarcely be avoided, even after making allowance for the increased proportion of broad tissues in the later years, that the actual volume of British export trade in these goods did not expand over the generation before the war and may even have diminished. As there is reason to suppose that the aggregate production of the industry in this country substantially increased during the period, it follows that, apart from the growing export trade in yarns, the increased production was absorbed in the home trade.

Factors affecting export trade.

The lack of expansion of the export trade in woollen and worsted tissues (taken together) and in carpets, flannels and blankets requires some explanation. It would seem either (a) that the aggregate consumption of woollen and worsted goods in other countries diminished, or (b) that the demand was met to an increasing extent from sources of supply other than the British industry. As regards (a) there may in some cases have been a shifting of demand as between wool textiles and other textiles, such as cotton or silk, but the fact that the production of wool in some of the largest producing areas such as Australia, South America and South Africa increased substantially, at any rate during the earlier part of the period, suggests that there was also an expansion of the world consumption of wool. Moreover, it cannot be doubted that the people of the large wool-consuming countries of the world, and particularly Europe and America, as they have grown in wealth and population, have been better clothed and have consumed more wool manufactures. As

regards (b), there are two possibilities, either that the aggregate volume of international trade in wool textiles increased, while the share of Great Britain in the trade diminished; or that the aggregate volume of international trade failed to increase (or actually declined), in which case consuming countries clearly produced for themselves a larger part of their requirements.

It can be shown that in the export trade in wool textiles Great Britain was on the whole gaining ground in comparison with the other most important wool textile manufacturing countries. The following table gives the annual average values of exports of wool textile manufactures (together with hosiery, but excluding tops and yarns) from the United Kingdom, France and Germany, which were by far the largest exporters, and from the United States, over the period 1880-1913 and in each of the years 1923 to 1926 :—

Years.	Value of Exports.			
	From United Kingdom.	From France.	From Germany.	From United States.
	Million £	Million £	Million £	Million £
1880- 4 (annual average) ..	18.5	14.7	11.3	0.07*
1885- 9 " " " ..	20.1	13.9	11.7	0.03
1890- 4 " " " ..	17.4	12.3	10.9	0.04
1895- 9 " " " ..	16.5	11.0	10.5	0.11
1900- 4 " " " ..	15.8	8.7	11.5	0.13
1905- 8 " " " ..	20.4	8.6	13.5	0.10
1909-13 " " " ..	24.6	8.2	12.8	0.17
1923 .. " " " ..	52.0	20.7	12.1	1.12
1924 .. " " " ..	53.7	28.8	11.9	0.73
1925 .. " " " ..	47.9	19.5	12.5	0.65
1926 .. " " " ..	43.5	16.4	14.4	0.60

* Includes some wearing apparel in this period.

For post-war years, the values inserted in the table are those obtained by converting the values in foreign currency at the average rate of exchange during each year.

It will be seen that during the generation preceding the war this country decidedly gained ground. Exports from the United Kingdom represented, in 1880-84, 41.6 per cent. of the combined exports of the United Kingdom, France and Germany, and in 1909-13, 53.9 per cent. The corresponding figure for 1925 was as much as 60 per cent., and for 1926, 58 per cent.

There are numerous other countries which export wool textiles, though few have exports of significant amount. Figures comparable

with those in the above table are given for 1909-13 and for 1923 to 1926 with respect to some of these countries :—

Value of Exports in £'000s.					
—	Annual Average 1909-13.	1923.	1924.	1925.	1926.
From—					
Sweden	70	686	756	704	575
Netherlands†	1,680	819	1,085	1,187	1,011
Belgium	585	1,483	2,147	2,396	2,198
Switzerland	536	749	1,078	1,000	1,080
Spain	150	704	719	1,296	760
Italy	940	2,297	3,748	5,159	5,319
Austria-Hungary	2,800	—	—	—	—
Czechoslovakia	—	4,998	8,000	7,361	6,447
Bulgaria	142	16	19	22	22
Persia	987	2,250	2,475	2,736	2,736*
India	173	567	836	601	562
Japan	50	222	227	313	303
Total	8,113	14,793	21,090	22,775	21,013

* Figure for 1925.

† Excluding small quantities of carpets which cannot be distinguished in the pre-war period.

The total value of the woollen and worsted manufactures exported in 1909-13 from these countries and from the four countries included in the previous table averaged some £53,900,000, of which exports from the United Kingdom amounted to 45·6 per cent. In 1880-84 the total exports of woollen and worsted manufactures from the United Kingdom, France, Germany and the United States averaged £44,600,000, of which 41·5 per cent. represented exports from the United Kingdom. Thus even on the extreme and unwarranted assumption that the export trade of the minor exporting countries was negligible in 1880-84, the British share of the total export trade increased from 41·5 per cent. to 45·6 per cent. in 1909-13. The increase was probably a good deal greater. The conclusion is irresistible that the lack of expansion shown by the British export trade in woollen and worsted goods during the generation preceding the war was due to restricted development of international trade in these goods; and further that, since the world's consumption of wool was increasing, this restricted development of international trade was connected with increased self-sufficiency of the consuming countries in the production of manufactured goods.

It is not without significance that the British export of worsted yarn was expanding at the same time that the export of worsted fabrics was diminishing. For worsted weaving can be more easily

established and developed than either worsted spinning or wool combing. Germany, where the consumption of woollen and worsted goods undoubtedly expanded very greatly in the generation before the war, was the principal purchaser of British worsted yarns, and this meant that the weaving section had grown out of proportion to the earlier stages. But Germany was not alone in this respect. A similar state of affairs existed in some other European countries such as Austria-Hungary, and in countries outside Europe (e.g. Canada).

The British export of wool tops was also increasing up to 1913, a fact which points to the expansion of worsted spinning in other countries before the war.

British share of world trade in post-war years.

Turning from the question of pre-war tendencies to the comparison of the pre-war and post-war position of British exports of wool textile manufactures and hosiery relatively to the corresponding exports of other countries, it appears that while in 1909-13 United Kingdom exports of those products represented 45·6 per cent. in value of the corresponding exports of all the countries for which figures have been given, the percentage had increased to 46·2 in 1924 and 46·4 in 1925, falling to 45·3 in 1926. The post-war percentages would be slightly increased relatively to the pre-war percentage if allowance were made for the fact that the exports of Czechoslovakia include much trade which before the war would have counted as internal trade of Austria-Hungary. As against this, the exclusion of shipments to the Irish Free State (which figured in the British exports of 1924-26 but not of 1909-13) would reduce the percentages by about 0·9 in each of the three post-war years.* On the basis of values, therefore, the position of the United Kingdom in the export trade in these goods would appear to have been in 1924 and 1925 as favourable relatively to that of other exporting countries as was the case before the war, and in 1926 only slightly less favourable. The matter is further discussed on the basis of quantities in a later section of this chapter (p. 221), and the results there obtained somewhat qualify those given above.

II. FEATURES OF THE INDUSTRY.

Size of industrial units.

A characteristic feature of the wool textile industry is the small size of many of the industrial units. Small scale undertakings are prevalent in nearly all branches of the industry, and on the whole the unit is distinctly smaller than in the cotton industry. Moreover,

* The post-war territorial changes affecting France and Germany have transformed trade formerly internal into international (and vice versa), but it is not practicable to adjust the figures in this respect.

unlike the latter industry, which is organised largely on joint stock lines, the wool textile industry comprises a majority of privately owned and personally conducted businesses, although these (being mostly small) employ a minority of the operatives. In a paper on "The Distribution of Employment in the Wool Textile Industry of the West Riding of Yorkshire,"* Mr. A. N. Shimmin gave the following figures:—

Size of Undertaking in Number of insured Operatives.		Number of Limited Liability Companies.	Number of Private Firms.	Total Number of Companies and Private Firms.	Total Number of insured Operatives Employed.
1- 20	..	49	331	380	3,718
21- 40	..	64	119	183	5,402
41- 60	..	62	75	137	6,630
61- 80	..	44	49	93	6,562
81-100	..	49	40	89	7,922
Total 1-100	..	268	614	882	30,234
101-120	..	42	42	84	9,098
121-140	..	38	25	63	8,294
141-160	..	32	13	45	6,706
161-180	..	29	18	47	8,072
181-200	..	22	19	41	8,014
Total 101-200	..	163	117	280	40,184
201-300	..	70	24	94	23,107
301-400	..	35	13	48	16,486
401-500	..	21	9	30	13,209
501-600	..	9	1	10	5,350
601-700	..	9	—	9	5,809
701-800	..	11	—	11	8,308
801-900	..	4	—	4	3,425
901-1000	..	2	—	2	1,869
1001-	..	11	3	14	19,688
Total 201-	..	172	50	222	97,251
Grand Total	..	603	781	1,384	167,669

The table takes no account of uninsured operatives, (principally juveniles, under 16 years of age). According to the Census of 1921 persons of 14 or 15 years of age represented some 8.5 per cent. of all persons of 14 years and over engaged in the industry. It should also

* Journal of Royal Statistical Society, January 1926.

be noted that the figures relating to small undertakings include nearly 200 rag sorting firms (many of which employ a mere handful of operatives) in the Dewsbury and Batley districts. The table shows that over half the undertakings (64 per cent.) employed not more than 100 insured operatives (though the operatives employed by these small firms were only 18 per cent. of the total), and that the number of insured operatives per undertaking averaged 121 for the whole of the industry of the West Riding. Over half the total number of undertakings (56 per cent.) were private firms, but the predominance of the private firms is limited to the smaller undertakings. Many of the limited companies are private companies.

Business amalgamations and large undertakings.

Concentration of mill ownership has proceeded to some extent during the last few years. Thus, a number of worsted spinning mills owned by ten companies were combined in 1920 in a company now known as Illingworth, Morris and Company Limited. Owing to depreciation in trade the company found difficulty in earning profits or paying dividends, and early in 1927 the capital was reduced with the sanction of the Court from £5,000,000 to £4,096,118. Another combination formed about 1920 was of knitting wool spinners, under the title Patons and Baldwins Limited (capital £1,599,000 ordinary stock, £1,359,000 preference and £260,000 debentures). An older undertaking of large size is Salts (Saltaire) Limited. This company specialises in the working up of alpaca and mohair, and is an integrated concern in the sense that it embodies in itself the principal processes of manufacture. It has a paid-up capital of £3,388,000 in debenture preference and ordinary stock.

It is, however, in the *combing* sections of the industry that the formation of large business units has proceeded furthest. In the *combing* section Woolcombers Ltd. represents an important amalgamation of wool-combing businesses. The company was formed in 1904 to acquire the undertaking of the Yorkshire Woolcombers' Association Limited,* which had taken over 41 woolcombing businesses of private firms and companies a few years earlier. It has a capital of £300,000 ordinary shares, £210,000 preference shares and £325,000 debenture stock.

In the *dyeing and finishing* section, amalgamation has been promoted by the fact that important technical advantages may be attained through large scale operation. The principal and most successful amalgamation is the Bradford Dyers' Association Limited.* It was constituted in 1898 as an amalgamation of 22 firms, comprising about 90 per cent. of the Bradford piece dyeing trade. Other undertakings were subsequently brought in. The company has a

* This and the other "Associations" mentioned in the present section are, of course, commercial undertakings trading for profit.

capital of £2,170,363 ordinary shares, £2,500,000 preference shares and £1,453,750 debenture stock. The British Cotton and Wool Dyers' Association Limited was registered in 1900 as an amalgamation of 46 companies engaged in dyeing, bleaching, printing and sizing cotton yarn, wool, and woollen and worsted yarns. The company has a capital of £774,165 ordinary shares and £620,000 debenture stock. It is a member of the West Riding of Yorkshire Master Slubbing Dyers' Association. Other amalgamations are the Leeds and District Worsted Dyers' and Finishers' Association, Limited (capital £180,000 ordinary shares, £63,000 preference and £21,216 debenture stock), formed in 1900; and the Yorkshire Indigo Scarlet and Colour Dyers Limited (capital £38,927 ordinary and £77,539 preference shares and £101,615 debenture stock), formed in 1899.

Price fixing associations.

It is in the worsted branch of the industry, where the successive stages of production are separately organised, that there is most chance of production at one particular stage being so organised in combination as to create a monopoly or bargaining advantage over other producers at the same or other stages of production.

Some 90 per cent. of the *combing* section is included in the Woolcombing Employers' Federation, an organisation which draws up and publishes a Woolcombing Tariff or price list agreed among the commission combing members of the Federation. These own roughly 50 per cent. of the combing machines in the trade, and 95 per cent. of all the combs normally employed on commission woolcombing. Topmaking combers (that is to say combers who are working for their own account), spinner combers, and commission combers outside the Federation are not parties to the agreement, which is of the nature of a friendly arrangement without penalties. The Federation state that over a long period of years variations in the list have been made almost solely owing to wage changes, wages being the largest item in the cost, viz :—between 35 and 50 per cent. of the total. Under the tariff issued in August 1923, charges for combing ranged from 3½d. to 7½d. per lb. of wool, burring and gilling in being charged for separately (½d. or ¾d. for burring and ¼d. for gilling in). The percentage increases over corresponding charges current in 1913 ranged from 100 to 200 per cent., the unweighted mean of the increases in the case of all the comparable charges taken together being about 135.*

An analogous tariff is applicable to *wool carbonising* (i.e. removing burrs, etc., by a chemical process) and is drawn up by the Wool Carbonisers' Federation.

* See also page 212 as to financial results of Woolcombers, Ltd.

In certain branches of the *worsted spinning* industry, acute industrial depression has led to attempts to limit competition. In 1927, there was formed the Single Lustre and Demi-Yarn Spinners' Association Limited whose aims are "to promote and protect the interests of persons owning, carrying on or interested in the business of spinning single lustre and demi-lustre yarns and other allied industries in the United Kingdom." The Association comprises the principal firms engaged in the particular branch of trade in question, and it is stated that it will operate on the lines of a price fixing association.

There are also the following employers' associations of commission *dyers and finishers* :—

Huddersfield Master Dyers' and Finishers' Association.

Leeds Dyers' and Finishers' Federation.

Yorkshire Dyers' Federation.

West Riding of Yorkshire Master Slubbing* Dyers' Association.

These organisations, together with the Bradford Dyers' Association Limited, form the Master Dyers' Committee (Yorkshire), and this body is a constituent of or is included in the Allied Association of Bleachers, Dyers, Printers and Finishers, the offices of which are in Manchester. Prices for different classes of work are fixed by agreement among the associations concerned, and the reasonableness of the prices thus fixed was the subject of considerable controversy in the trades which gave evidence before the Committee.†

The Woollen and Worsted Trades Federation complained of the existence of price rings in connection with certain other services used by the woollen and worsted industries. These are (1) card clothing, (2) repairs and renewals of reeds and healds, (3) insurances, (4) waste collection and (5) flock collection; but it appears that in some cases the price rings have been effectively countered by organisations established co-operatively.

In the carpet industry prices of certain standard qualities of carpets are fixed by the manufacturers' associations.

Trade associations and trade unions.

Under this head may be distinguished :—

- (a) Organisations for representing and promoting the commercial and general interests of the trade.
- (b) Employers' Associations.
- (c) Trade Unions.

* After combing, the wool is condensed into a ribbon or sliver, which is given a slight amount of twist and is then called "Slubbing."

† The evidence taken by the Committee from the representatives of the finishing trades related mainly to the bleaching, dyeing and printing of cotton piece goods, as set out in the chapter on the Cotton Industry, pp. 43–50. The question of charges for dyeing piece goods of wool is briefly discussed below, pages 215–6.

(a) *Trade organisations.* Largely as a result of war-time control and experience the wool textile industries are much more completely organised in trade associations than was previously the case. In 1921 there was formed the Wool Textile Delegation (with offices in Bradford), with the object of combining in one representative body the interests of all sections of the English wool textile industry from the importer of the raw material to the distributing merchant of the finished goods. The Scottish branch of the industry has a separate organisation, which co-operates with the Delegation. The constituent organisations of the Delegation, whose names are given below, each annually appoint four delegates, and these constitute the Delegation.

British Wool Federation	330 firms.
British Fellmongers' Association	20 "
Woolcombing Employers' Federation	50 "
Wool Carbonisers' Federation	10 "
Worsted Spinners' Federation	230 "
Woollen and Worsted Trades Federation	750 "
Bradford Dyers' Association Limited	} (see pp. 177-8)
British Cotton and Wool Dyers' Association Limited	
Leeds Dyers' and Finishers' Federation	
Yorkshire Dyers' Federation	} 25 firms.
Association of Export Merchants of Raw Materials and Yarns	
Bradford Merchants' Association	80 "

Like the Delegation itself, several of the Federations are new. Thus the Worsted Spinners' Federation, the Association of Export Merchants of Raw Materials and Yarns, and the Woollen and Worsted Trades Federation (the last comprising woollen and worsted manufacturers) were established in 1917.

The interests of the trade in various districts are also represented in the Chambers of Commerce. The Chambers of Commerce of the wool-working towns in the West Riding have appointed a committee to co-ordinate the views and actions of the various Chambers included, and this Committee accordingly can claim to speak with authority on behalf of the industry of the West Riding.

(b) *Employers' Associations.* Most of the constituent bodies of the Wool Textile Delegation are concerned amongst other activities with representing the interests of employers in negotiations with labour. The various associations are united for this purpose in a representative body called the Wool (and Allied) Textile Employers' Council.

(c) *Trade Unions.* During the war the trade unions, like the employers' associations, became more highly organised and much stronger. A National Association of Unions in the Textile Trade

was formed, with a central office at Bradford ; and this comprises no less than 35 unions with members engaged in the industry. About 60 per cent. of the workers in the industry are organised, the unorganised workers being principally in the spinning, twisting and drawing sections, where young people are chiefly employed.

A Joint Industrial Council* for the Woollen and Worsted Industry was established in 1919.

Scope and nature of commercial transactions.

In the woollen branch, with its vertical organisation, the material does not as a rule pass from one ownership to another in the course of manufacture. There is, however, some dealing in yarns, both for the use of the industry itself and for outside consumption. In the worsted industry with its sectional organisation, transactions both in tops and in yarns are the rule, yarns being sold either to the manufacturer, to the hosiery, carpet making or other trade, or for export. In most cases topmakers deal directly with spinners and spinners with manufacturers.

Organisation of Home and Export Trade.

In disposing of their products abroad or for consumption in the home markets, woollen and worsted undertakings sell partly through independent merchants, and partly through their own merchanting organisation. *Worsted yarn* for export is sold to a great extent to yarn merchants in Bradford, but a few spinners are represented directly in foreign countries and sell the yarn through their own agents. A large proportion of the less expensive *woollen and worsted cloths* for the home market is sold direct to wholesale clothing manufacturers without the intervention of a merchant, but a part of that trade, and the bulk of the home trade in high-class goods, passes through wholesale cloth merchants. Scottish tweeds are sold direct by the manufacturer to small retail traders. The export trade in woollen and worsted goods is partly in the hands of merchants or shippers in Bradford, London, Manchester; etc.; but many manufacturers have agents or travellers through whom they do business direct practically all over the world. It is not uncommon for a small group of manufacturers of different types of goods to combine together to engage a traveller or agent for the purpose of placing their products in a given market, but such co-operation is confined to manufacturers who are not in competition with one another. The disastrous slump in prices of 1920-21 left many merchant houses in a crippled condition and is said to have compelled manufacturers to develop their own distributing machinery to an increased extent.

In the *carpet* export trade, manufacturers are relying more and more on their own export selling organisations, and the Carpet

* See Survey of Industrial Relations, p. 274.

Manufacturers' Association state that the merchant is gradually disappearing. As in the cloth trade, manufacturers of products do not have joint representatives, but a single representative may sell the products of firms making, say, Axminster or Wilton carpets and possibly linoleums. A considerable proportion of the home trade in carpets passes through wholesale dealer

International Arbitration Agreements, &c.

In the sphere of international trade, the Bradford Chamber of Commerce, in conjunction with other Chambers of Commerce with trade associations in the industry, has negotiated since 1926 a series of Arbitration Agreements, which are likely to be valuable in promoting harmonious relations. After separate agreements had been made with organisations representative of the manufacturers in France, Belgium, Italy and Germany, a single comprehensive International Wool-Textile Arbitration Agreement was signed in Turin in October, 1926, by representatives of the five principal groups. Each group agrees to recommend its members to stipulate in their contracts that any dispute which may arise will be referred to the arbitration of the Chambers of Commerce, viz., the Chamber of Commerce of the seller, or, where work is done on commission, that in the country where the work is performed. At a conference held in Reichenberg in October, 1927, the wool textile organisation of Czechoslovakia adhered to the arbitration agreement.

The conferences which have been held in the last few years have assumed a wider importance than is suggested merely by the conclusion of these arrangements for arbitration. They have provided opportunities for the discussion of numerous other questions of common interest to the wool-using industries, and such importance is attached to international co-operation that it has been decided to hold an International Wool Conference every year for the purpose of discussing subjects of importance to the wool and wool textile industries and taking action for the common good.

Efforts to Promote Sale of British Goods.

The depression of the past few years has resulted in much thought being given to the question how the sale of British wool textile goods may be promoted. The industry has been stimulated to produce a wide variety of novel effects and designs, and the possibilities of the use of silk and artificial silk in combination with wool are in part being widely exploited by spinners and manufacturers.* Manufacturers have also in recent years attached increased importance to individuality of design; and instead of buying as formerly from public designers who sell to different firms they now always employ their own designers.

* See Chapter on the Artificial Silk Industry, p. 279.

The British Empire Exhibition at Wembley provided an opportunity which was seized by the industry for displaying to the world the wide range and high quality of the goods produced. Apart from the exhibits of individual businesses, an imposing exhibit was organised by the Bradford Chamber of Commerce with the object of showing what Bradford could do in the production of beautiful fabrics for every possible service at home or abroad.

Efforts have been made to establish close relations between the manufacturers and the retailers in this country, in order to induce buyers to demand and give preference to British manufactures, all else being equal. The intention is not to eliminate the merchant houses, but rather to enable retailers and manufacturers to understand the requirements and problems of each other, and thus to co-operate more effectively in the distribution of British goods. A joint committee of the Bradford Chamber of Commerce and the Drapers' Chamber of Trade has been formed to promote the common interests of producers and distributors.

Co-operative Advertising.

An instructive experiment in co-operative advertising is represented by the work of the Scottish Woollen Trade Mark Association. Owing to the fact that a great quantity of goods was being sold in the home and foreign market as "Scottish Woollens" which had no claim to that designation, the Scottish manufacturers decided in 1913 to apply to the Board of Trade for sanction to have a trade mark registered, which would be a guarantee to all consumers that the cloth was made in Scotland and contained nothing but pure, new wool. This was done, and the trade mark has been registered in approximately seventy countries at a very considerable cost. In 1919 it was decided to spend a certain sum of money in advertising, and money was raised for the purpose, first by a levy of so much per unit of machinery on all firms, and later as a percentage on the wage bill returned under the National Health Insurance Act. In various forms of propaganda about £150,000 were spent. In 1921 a Delegation was sent to the United States to study the market and to pave the way for increased business connexions, and the results were regarded by the Association as highly satisfactory.

The Association state that the principal difficulty in connection with any combined scheme of advertising is that a universal trade mark must, of necessity, apply to a very varying range of goods, e.g. different members may specialise in different types of cloth which sell to the wholesale trade at quite different ranges of price, but the same trade mark applies to both, and an unscrupulous wholesaler or retailer realises this and exploits the fact. A second important difficulty is to prove to the members that advertisement of the kind in question is yielding results.

While the experience of the Scottish Woollen Trade Mark Association is certainly instructive, it is not clear to what extent its methods could be advantageously adopted in other branches of the industry. It may be noted, however, that the promotion of an organisation with similar aims has been under consideration in connexion with the trade in indigo serges. The Wool Textile Delegation stated in evidence that "catalogues, publicity campaigns and trade fairs and exhibitions are generally considered to be of no service to the industry."

Standardisation.

The possibility of standardisation in the wool textile industry is limited at the one end by the diversity of types and qualities of raw wool and at the other by continual changes of fashion among the consuming public. Some progress has been made in recent years in securing international uniformity in the designations applied to several grades of wool and tops (*see* p. 235); and there are universally recognised standards of "regain" (i.e. permissible limits of moisture) for tops, yarns and cloth. Such standards are obviously necessary in the case of commodities like tops and yarn, which are sold by weight; and it is one of the functions of the Bradford Conditioning House authoritatively to certify the "condition" in this respect of tops and yarns submitted to it by members of the trade.

As regards woollen and worsted fabrics, the changing tastes and requirements of the consuming public exclude the possibility of standardisation as a general rule. Having regard to the importance and diversity of our export trade, the markets for which British manufacturers are producing possess a much wider range of requirements than are possessed by the comparatively uniform American market, and the introduction of standardisation here is correspondingly more difficult than it is in America. Even such limited standardisation as is implied by the reduction of the number of sizes in which blankets are made—a development which has taken place in the United States—is considered by the trade to be impracticable here owing to the different tastes of the export markets.

In this country mass production scarcely exists, and the products of large firms generally differ from those of the average-sized firms in number of styles or qualities rather than in quantity of pieces to a style.

Industrial Research.

A Research Association for the Woollen and Worsted Industries was formed in 1918 under the Government Scheme for Industrial Research.* It has performed useful work and promises to achieve still more valuable results in the future.

* *See* "Factors in Industrial and Commercial Efficiency," pp. 306, etc.

The Research Association believes that, since 1918, there has been a marked change in the attitude of the industry towards research. The following is an extract from its evidence. "Research, a word of which the very meaning was not correctly understood, is beginning to be appreciated by an increasing number of men in the trade. Evidence accumulates that a steady conversion is going on, and that an increasing number are not only absorbing such purely practical results as have been put before them but are understanding more of scientific terms and methods." Even now, however, there is not the general appreciation of the aims of the Research Association necessary to secure support from the whole trade, and the propaganda period is, therefore, not at an end. Furthermore, the means of securing the application of results of research are much less complete than the appreciation of the value of research, though some of the trade associations in the industry are endeavouring to promote the former, as well as the latter aim. Such results of the Research Association's work as it is desired to communicate outside the membership of the Association are published in the journal issued monthly by the Textile Institute.

The directions in which research is being pursued are numerous, and include study of (1) the wool fibre, both independently and in connexion with the processes of manufacture; (2) standards of "regain"; (3) methods of scouring; (4) combing, drawing and spinning. In the last case, very interesting results have been obtained, especially as regards spinning; and methods of avoiding certain defects have been pointed out, and the possibility of improvements in other directions suggested. As regards scouring, modifications in the methods used have been recommended, and great savings have been effected by their adoption. Laboratory work has been undertaken with the object of throwing more light on such questions as spinning quality of wool. Scientific investigation of cloths is being closely pursued. "Every year the tendency to regard a fabric as a 'mass of balancing strains' is being emphasised, with the result that not only is the making of all the standard fabrics better understood, but ideas for new interlacings or 'strainings' are continually coming up. Those fabrics in which both warp and weft deviate from the straight line, in imitation of knitted effects, are now readily produced." *

Much valuable work has been done on questions connected with dyeing and finishing.

The Department of Textile Industries at Leeds University and the Bradford Technical College are both important from the point of view of research as also of scientific and technical education and

* See Journal of the Royal Society of Arts, 14th November, 1924: report of lecture by Professor A. F. Barker on "Recent Progress in the Wool Industries."

training. Each is equipped with large scale machinery for the production of woollen and worsted yarns and tissues.

The Department of Textile Industries at Leeds has received generous financial assistance from the Clothworkers' Company, and claims that so far as wool manufacturing is concerned, there is no college or school either in Europe or America which can compare with it in the extent of its equipment or in the opportunities offered for research and the application of science to the wool industry. The Department has established close relations with all the wool producing continents and countries, and the investigations and researches carried out range from work dealing with the various breeds of sheep to the finishing of the woven cloth. The Department co-operates with the Research Association in exchange of ideas and use of apparatus.

The scope of the Research Association for the Woollen and Worsted Industries does not extend to the carpet industry, which is without a research association. The larger carpet manufacturers maintain laboratories for carrying out tests, but little appears to be done by them even individually in the way of research.

Training and recruitment of Labour.

Almost every task in the industry has its own technique and demands a certain amount of training, experience and dexterity for its adequate performance. The proportion of wholly unskilled persons employed is therefore very small. The industry takes in the majority of its recruits as they leave the public elementary schools, and in the great majority of cases there is no special previous training.*

It cannot, however, be without considerable significance to the industry that, apart from students attending textile courses at Leeds University, there are in the Bradford Technical College some 800 students in attendance upon textile courses. These students are preparing for careers in the textile industry, and, in a large proportion of the cases, they are actually engaged already in the industry itself. From the records of the careers of such students, it appears that an increasing number of young persons are entering the textile industry after a secondary school training or after the completion of a textile course in the Technical College. These courses are arranged to meet the needs of those who may wish ultimately to become wool buyers, merchants, designers or managers of works. Special courses are also available for the training of overlookers and the craftsmen of the industry. Although it may have been in the past uncommon to find an overlooker or manager

* See "Factors in Industrial and Commercial Efficiency," pp. 212-4.

with special technical training engaged in a mill, there can be little doubt that to-day the industry as a whole is coming to realise the indispensability of such technical instruction.

Formal apprenticeship is exceptional in the industry, but the recruits are gradually trained up to the work. They are first employed on the simpler operations, usually working in conjunction with experienced operatives. They thus become familiar with the various machines and as years go on enter the ranks of weavers, spinners, winders, etc. When an overlooker is required the smartest lad in the spinning room is taken, put in as an improver, and gradually trained to the work. Owing to the absence of adequate prospects of direct promotion, a certain number of the young men in the spinning room go to other situations in the mill such as wool sorting, joinery work, and mechanics' work.

In sections of the industry covered by craft unions, labour is recruited through the trade union offices, and agreements are generally in operation regulating the number of apprentices who are to be trained. In the spinning section, however, where the majority of boys and girls are employed, there is no arrangement to regulate their number, and employees are started at the work gates. Difficulties are said to have been experienced in many districts in obtaining enough recruits for the spinning section, and this despite the large amount of unemployment prevailing. The abolition of the half-time system has diminished the supply of juvenile labour, and some employers are inclined to view with alarm the effects which would ensue from a further raising of the school-leaving age.

In the carpet-making industry conditions of training bear a close resemblance to those in the woollen and worsted industry. There is no apprenticeship. Technical training is carried on almost entirely in the works. Some technical instruction is offered at the Kidderminster School of Science and Art and at similar institutions at Halifax and Glasgow.

Productivity of Labour.

Up to 1919 normal working hours in the industry were 55½, although in the wool-combing section the hours worked by men were somewhat longer, mainly owing to the existence of a night shift in which men had to take the place of women employed on the day shift. In 1919 the number of hours was reduced to 48. The evidence of the employers' associations was to the effect that the reduction of hours had involved a fall in the weekly output per worker. In some cases it was said that this reduction of output fully corresponded to the reduction of hours, but in other cases the reduction of hours was said to have been partly compensated. Thus in the woollen branch the loss of production was stated by the Woollen and Worsted Trades Federation to be proportionately only about half the loss of hours, on account of improvements which had been

effected in machinery, such as increase in the speed of looms.* In woolcombing the introduction of a system of bonus on output is believed to have counteracted the effect of reduced hours to a material extent. In worsted spinning there has been very considerable substitution of piece work for time work, and the improved output thus secured no doubt partially compensated for the reduction in hours. In worsted manufacture, output was said to have fallen to an extent at least corresponding with the reduction of hours, as the looms were already running up to the maximum practicable limit of speed.

In the carpet-making industry hours were reduced to 48 per week from 55½ in England and 49½ in Scotland. Some firms found that there was a reduction in the daily output, others that there was none.

The importance of stimulating exertion on the part of the worker seems to be increasingly recognised in various sections of the woollen and worsted industry. Reference has already been made to the system of bonus on output adopted in the combing section. During the last ten years there has been introduced in a large number of works, particularly in the dyeing and finishing section, a system of payment on what is termed collective piecework basis; that is to say departments are given a rate per 100 pieces or lb., and the amount earned by a department is shared amongst the operatives in the department according to status and hours worked. The system is favoured both by the employers and the employed. Piecework is increasing generally in the industry, and pieceworkers are said to comprise now two-thirds of the total workers.

In the carpet industry there has been no tendency towards substitution of payment by results for time work, or *vice versa*.

III. BRITISH EXPORT AND HOME TRADE IN WOOL TEXTILE PRODUCTS.

It has been shown earlier in this chapter that on the whole the British Wool Textile Industry before the war was an industry of expanding production. Fluctuations occurred from year to year consequent upon variations in supply and price of raw material, in the purchasing power and requirements of consumers, and in other circumstances; but it is conclusive evidence of growth that the amount of wool available for consumption, when averaged over periods of five years, increased rapidly with only one break of continuity in a century. The various sections of the industry did not enjoy equal fortune, and it has been indicated that during some decades before the war the manufacture of worsted cloth was declining, while the production of worsted yarn, as well as of woollen yarn and cloth was expanding. It has also been shown that the export

* See page 167.

trade in cloth and other manufactured products was, broadly speaking, stationary. The increasing output of the industry as a whole was, therefore, absorbed by the home market. The purpose of the present section is to consider in relation to conditions immediately preceding the war the post-war position from the points of view of (a) exports, (b) imports and (c) the general activity of the wool textile industry. In Section IV comparison will be made, in more detail than was attempted in Section I, between the movements of our own overseas trade in wool textiles and those of other countries; and, further, the position of our trade relatively to that of other exporting countries in certain large markets will be indicated.

Regarding the statistics of imports and exports, it may be noted that the comparability of the figures for periods prior to 1st April, 1923, and periods subsequent to that date is affected to some extent by the changes resulting from the establishment of the Irish Free State as a separate Customs area. As from the date mentioned, the British trade accounts include the trade of Great Britain and Northern Ireland with the Irish Free State, while the direct foreign trade of the Irish Free State is excluded. The direct imports of woollen and worsted yarns and manufactures into the Irish Free State are insignificant, but the Irish trade accounts show exports of woollen and worsted yarns and manufactures to countries other than Great Britain and Northern Ireland amounting to £48,675 in 1924, £75,888 in 1925, and £90,558 in 1926. These exports consist almost wholly of manufactured goods—mainly woollen tissues. The British trade accounts show the value of imports and exports of woollen and worsted yarns and manufactures in the trade of Great Britain and Northern Ireland with the Irish Free State, and the percentage relation of that trade to the total British trade in woollen and worsted yarns and manufactures, to have been as follows in the same years:—

Year.				Imports from the Irish Free State.		Exports to the Irish Free State.	
				£	Per cent.	£	Per cent.
1924	..	..	..	360,911	2·6	1,551,522	2·5
1925	..	..	..	301,605	2·1	1,348,077	2·5
1926	..	..	..	237,391	1·6	1,350,267	2·9

In addition there is a British export trade in tops to the Irish Free State. Details regarding this and regarding yarns and manufactured goods exported to the Irish Free State are contained in the tabular statements in the present section.

Export Trade.

The branches of trade dealt with in the present section include (1) Wool Tops and Yarns, (2) Woollen and Worsted Tissues, (3)

Flannels and Delaines, (4) Blankets and (5) Carpets and Rugs. These items represent altogether over 95 per cent. of the value of all the exports of woollen and worsted goods.

Exports of wool tops and woollen and worsted yarns and manufactures represented before the war, and continue to represent, a large proportion—approaching half—of the production of woollen and worsted yarns and manufactures in the United Kingdom. The proportion of exports to production varies considerably in different branches of production and it also varies from time to time. Tops and yarns are of course largely embodied in manufactured products, and confining attention to these, it may be noted that exports of woollen and worsted tissues represented, in linear yardage, in 1907, 47·0 per cent. and in 1912, 40·5 per cent. of the production of woollen and worsted tissues in Great Britain returned on the Census of Production Schedules for the woollen and worsted industries. In 1924, on the basis of square yardage, and excluding exports to the Irish Free State, the corresponding percentage was 49·1. In the case of flannels and delaines, the percentage was 18·1 in 1907, 16·9 in 1912 and 28·4 in 1924; in the case of blankets 25·6 per cent. in 1907, 31·8 per cent. in 1912, and 65·6 per cent. in 1924, when, however, exports were abnormally large. Exports of carpets represented in each of the Census years in the neighbourhood of one third of the production, but owing to changes of classification, closely comparable figures cannot be given.

(1) *Tops and Yarns.*

The general character of the export trade and the principal changes which have occurred are shown in the following table, which gives a comparison of the annual average figures for 1909–13 and of each of the years 1924 to 1926 :—

British Exports of Wool Tops and Yarns. (In thousands of lb.).

	1909–13 average.	1924.	1925.	1926.
<i>Wool Tops—</i>				
To foreign countries ..	39,628	33,521	25,896	25,353
To British countries ..	2,223	7,608	6,145	8,269
Total exports ..	41,851	41,129	32,041	33,622
To Western Europe* ..	31,744	23,921	17,099	16,782
of which to Germany ..	14,967	9,805	8,250	6,759
Netherlands ..	2,599	2,311	1,304	1,109
Belgium ..	2,018	2,331	1,633	1,913
France ..	1,124	1,014	695	950
Italy ..	3,056	363	573	323
To Russia, Finland, Poland	1,355	2,443	2,400	3,941
To Austria, Hungary and Czechoslovakia.	836†	24	27	166
To Japan ..	5,193	6,536	5,611	3,757
To Canada ..	2,079	5,136	4,491	6,281
To Irish Free State ..	—	372	211	355

British Exports of Wool Tops and Yarns. (In thousands of lb.)—continued.

	1909-13 average	1924.	1925.	1926.
<i>Woollen and Worsted Yarns—</i>				
To foreign countries ..	81,026	56,565	50,031	38,778
To British countries ..	5,965	9,327	7,383	8,553
Total exports ..	86,991	65,892	57,414	47,331
To Western Europe* ..	69,746	41,296	38,077	27,903
of which to Germany ..	54,795	28,143	27,484	17,975
Netherlands	3,359	3,668	2,805	2,325
Belgium ..	2,299	1,180	955	785
France ..	3,318	1,816	1,358	1,063
Italy ..	182	502	558	500
To Austria, Hungary and Czechoslovakia.	2,697†	668	408	481
To Russia, Finland, Latvia, Poland.	4,756	1,292	2,301	1,499
To Japan, China, Hong Kong.	1,003	8,880	5,206	6,229
To United States ..	157	1,791	1,493	625
To Brazil	486	684	693	407
To Irish Free State ..	—	1,648	1,121	1,329
To Australia	1,412	2,940	2,098	2,162
To Canada	3,879	2,759	2,585	3,371

* Including Sweden, Norway, Denmark, Germany, Netherlands, Belgium, France, Switzerland, Italy and (in the case of tops) also Portugal and Spain.

† Austria-Hungary.

In 1927 exports of wool tops amounted to 41,951,500 lb. in all. Exports to Germany amounted to 11,528,700 lb., to Belgium 1,718,600 lb., to France 1,097,600 lb., to Japan 1,937,700 lb. and to Canada 7,102,300 lb. Exports of woollen and worsted yarns amounted to 69,096,300 lb. Full details by countries are not available, but exports of worsted and alpaca and mohair yarns to Germany amounted to 28,505,900 lb. in 1927, compared with 15,549,900 lb in 1926 and 24,805,600 lb. in 1925.

Tops and yarns being semi-manufactured products used (though in the case of yarns not exclusively) in manufacturing, the exports are naturally directed in the main to those countries which have a wool textile industry, and in particular a worsted industry, since the mass of the yarns are of the worsted variety, and the tops are used entirely in the manufacture of worsted yarn. Changes in the volume of exports to a particular country may be due to one or more of a variety of causes, such as an alteration in the total demand of the country, or the substitution of home production, or imports from third countries, for British goods. The demand will obviously be affected by the relation between the output capacity in the various sections of the wool textile industry. Weaving is the section which is usually developed earliest and most extensively, thus giving

rise to an import trade in yarn. As spinning develops, yarn imports may diminish and imports of tops become important; but these again fall away as combing within the country increases. The whole question is one of relative development, and a reduction in imports of tops and yarns may denote that the earlier processes of the industry are being developed or that the requirements of the later processes are reduced. Apart from imports arising from unequal development of processes, the wool textile industries of practically all manufacturing countries find it advantageous on occasions to import special kinds of tops and yarns, and many of these countries may further carry on an export trade in their own tops and yarns. Statistics of British exports of tops and yarns to particular destinations are not in themselves sufficient to elucidate the situation, and regard must be had to the course of imports from other sources into the countries concerned and the development of production within those countries. Some information on these points for a number of countries is given in Appendix 2, but the data are insufficient to enable a comprehensive survey to be made. In any case it would probably be dangerous to draw inferences regarding the future from statistics relating to recent years, as conditions, especially in Europe, were by no means stable, and the course of trade was affected by factors which, though important, were not permanent.

Confining attention, therefore, to general conclusions, the following points may be mentioned in connexion with the tables given above :—

- (a) The bulk of the export trade in tops and yarns is to foreign countries, and preponderantly to European countries, amongst which Germany takes the largest quantities.
- (b) The aggregate exports of tops and yarns fell substantially between 1909–13 and 1924–26, the decline in the quantity exported to Western Europe being more than sufficient to account for the decrease in the total.*
- (c) The decline in exports of British tops to Germany in 1924 and 1925 coincided with a greater decline in Germany's total imports of tops, the British share thus showing an increase. In 1926 total imports of tops into Germany rose sharply, but imports of British tops further diminished. British exports of tops to Germany rose substantially in 1927. The increase in exports to Japan formed part of an increase in total imports of tops into that country.

* The figures for 1927 showed a marked recovery, bringing exports of tops, but not of yarns, to the pre-war level. It seems not unlikely that this recovery may be due in part to a postponement of trade from 1926 when production and export were hampered by the coal stoppage; and it may be noted that the average exports of 1926 and 1927 were intermediate between the figures of 1924 and 1925 both for tops and for yarns.

- (d) While exports of yarns from this country to Germany were falling heavily, the total imports of yarn into Germany remained at almost the pre-war level, and imports of worsted yarns, which constitute the bulk of the trade, increased. France and Belgium are among the countries which increased their trade to Germany in worsted yarns. Similarly, British exports to Belgium declined, while total imports into that country increased. In the case of France and the United States, both the exports from this country and the total imports declined. In the case of Italy and Japan, exports from this country and total imports increased.
- (e) While exports of yarns to British countries increased over the period 1909-13 to 1924-26, they still remained very small compared with exports to foreign countries. Generally speaking, the United Kingdom holds a preponderant share in the trade, and exports from this country fluctuate with the total imports into the various dominions. This is clearly seen in the case of Australia, New Zealand and Canada (even the United States having only a subordinate share in the trade of the last mentioned), but it does not apply in the same degree to India.

(2) *Woollen and Worsted Tissues.*

Turning now to Woollen and Worsted Tissues, the comparison of pre-war and post-war trade is set out in the following table:—

British Exports of Woollen and Worsted Tissues (in thousands of square yards).

		1909-13 average (estimate)	1924.	1925.‡	1926.‡	1927.‡
<i>(a) Woollen Tissues—</i>						
To foreign countries	..	76,417	106,314	85,851	72,376	(a)
To British countries	..	51,077	58,426	46,323	46,981	(a)
Total Exports	..	127,494	164,740	132,174	119,357	130,916
To Western Europe*	..	28,470	21,319	19,779	13,789	16,678(b)
of which to Germany	..	5,984	1,977	2,632	2,159	4,716
„ Netherlands	..	3,616	5,898	4,992	3,330	3,579
„ Belgium	..	3,384	4,311	3,412	1,648	2,513
„ France	..	4,824	2,393	2,605	1,880	1,680
„ Italy	..	1,416	2,266	2,176	1,712	1,566
To Eastern Europe†	..	8,530	10,777	9,585	6,162	(a)
To Japan ..	..	6,970	29,703	15,313	9,569	13,217

* Sweden, Norway, Denmark, Germany, Netherlands, Belgium, France, Switzerland, Portugal, Spain, Italy.

† Russia, Finland, Esthonia, Latvia, Lithuania, Poland, Austria, Hungary, Czechoslovakia, S H S. State, Greece, Bulgaria, Roumania, European Turkey.

‡ Excluding exports of tissues wholly or mainly of mohair, alpaca and cashmere (not being pile fabrics) in these years. The quantity of these tissues exported amounted to 764,000 square yards in 1925, 996,500 square yards in 1926 and 1,388,100 square yards in 1927.

(a) Not available. (b) Excluding Switzerland.

British Exports of Woollen and Worsted Tissues (in thousands of square yards).
—continued.

	1909-13 average (estimate)	1924.	1925.‡	1926.§	1927.§
<i>(a) Woollen Tissues—</i>					
continued.					
To China and Hong Kong	7,510	22,883	13,745	15,187	12,015
To United States ..	3,090	10,293	9,649	10,519	10,936
To South America† ..	17,230	13,078	13,499	11,888	12,358
To Irish Free State ..	—	3,542	3,609	4,590	(a)
To Union of South Africa	2,606	3,971	4,136	4,394	(a)
To British India ..	11,660	5,773	5,233	5,509	(a)
To Australia ..	14,730	14,087	10,068	8,882	9,999
To New Zealand ..	3,230	2,614	2,316	2,519	2,585
To Canada..	13,890	15,098	12,485	15,991	17,527
<i>(b) Worsted Tissues—</i>					
To foreign countries ..	58,434	32,364	27,421	23,520	(a)
To British countries ..	39,971	24,479	19,881	19,430	(a)
Total Exports ..	98,405	56,843	47,302	42,950	39,979
To Western Europe* ..	12,900	2,266	1,963	1,913	1,983(b)
of which to Germany ..	2,188	172	109	70	235
" Netherlands ..	1,475	128	97	84	102
" Belgium ..	1,511	79	40	33	57
" France ..	2,689	216	149	178	193
" Italy ..	2,422	410	456	280	223
To Eastern Europe† ..	2,600	2,718	1,963	1,326	(a)
To Japan ..	3,960	8,051	4,700	2,498	2,957
To China and Hong Kong	6,530	6,177	4,072	3,869	2,899
To United States ..	19,240	6,898	6,511	5,671	6,582
To South America‡ ..	10,870	5,325	5,617	5,539	6,203
To Irish Free State ..	—	512	361	318	(a)
To Union of South Africa	2,040	629	751	1,022	(a)
To British India ..	5,350	1,606	1,462	1,083	(a)
To Australia ..	7,510	2,824	2,348	1,819	2,184
To New Zealand ..	1,560	884	1,057	990	898
To Canada..	17,840	15,094	12,189	13,026	8,901

* Sweden, Norway, Denmark, Germany, Netherlands, Belgium, France, Switzerland, Portugal, Spain, Italy.

† Russia, Finland, Esthonia, Latvia, Lithuania, Poland, Austria, Hungary, Czechoslovakia, S.H.S. State, Greece, Bulgaria, Roumania, European Turkey.

‡ Peru, Chile, Brazil, Uruguay, Argentina.

§ Excluding exports of tissues wholly or mainly of mohair, alpaca and cashmere (not being pile fabrics) in these years. The quantity of these tissues exported amounted to 764,000 square yards in 1925, 996,500 square yards in 1926 and 1,388,100 square yards in 1927.

(a) Not available. (b) Excluding Switzerland.

The unit of quantitative measurement for exports of woollen and worsted tissues before the war was the linear yard, and for purposes of comparison with post-war years it has been necessary to estimate the number of square yards corresponding to the figures given in the returns. It has been assumed that woollen tissues before the war had an average width of 48 inches, and that worsted

tissues had an average width of 45 inches. The precise widths are a matter of dispute, and it has been urged that the average width of woollen cloth exported was as much as 52½ inches and of worsted cloth 48½ inches; but no conclusive proof of this is forthcoming. Acceptance of the latter figures would involve increasing by about 9 per cent. in the case of woollen tissues and 7 per cent. in the case of worsted tissues the figures for 1909-13 as given in the tables above.

A more serious qualification is that while the estimated average widths are believed to apply, subject to a comparatively small margin of error, to the aggregate exports of woollen and worsted tissues, they do not necessarily apply to the exports to any particular country. Clearly a wider margin of error must there be allowed. But the changes which have occurred, as represented by the above figures, in the quantities of tissues exported to particular countries or groups of countries are in many cases so considerable as to make any probable margin of error of subordinate importance.

Further, there is some reason to fear that, owing to mis-description on the part of exporters, tissues may not in all cases be correctly distinguished as woollen or worsted as the case may be; and it is believed in particular that some worsted tissues are inaccurately described as woollen tissues. It is probable that such mis-description has always existed, and there is no evidence that it has been more frequent since the war than it was before the war.

The figures relating to woollen and worsted tissues include piece goods of mixed artificial silk and wool in so far as the latter are known as "woollens" or "worsted," but not otherwise. The total exports of piece goods of artificial silk and wool amounted in 1926 to 1,581,045 square yards, valued at £302,918, and in 1927 to 2,068,450 square yards, valued at £350,396.

While tissues, like tops and yarns, are exported mainly to foreign countries, the share of British countries in the trade is much greater than is the case with tops and yarns. Western Europe, though a very important market especially for woollen tissues, is less important relatively to foreign countries than in the case of tops and yarns. These striking differences are due to the fact that, while tops and yarns, being mainly for further use in manufacture, are sent to manufacturing countries, woollen and worsted tissues, being as a rule goods ready for consumption (after being made up locally into clothes) are likely to be exported to the countries in which they will ultimately be used. By reason of the nature of the article the markets are situated chiefly in countries with a cool or temperate climate. Comparatively small quantities are sent to tropical countries, and in that respect the distribution of the trade differs from that of the trade in cotton piece goods.

The figures for 1924-27 when compared with those for 1909-13 suggest that, except in 1926, the export trade in woollen tissues

was on the whole fully maintained. On the other hand, the export trade in worsted tissues appears to have fallen by more than half, and it is noteworthy that the figures show a continuous decline from 1924 to 1927.

The decline is no doubt to be regarded to some extent as a continuance of the movement which was taking place before the war (*see* p. 171), but it was probably accentuated where (as on the Continent of Europe and in India) the poverty of consumers made it necessary to pay particular attention to considerations of price.

The falling off in British exports of worsted tissues seems to be shared in about equal proportions between British countries and foreign countries. In the case of woollen tissues, exports to foreign countries advanced relatively to exports to British countries in 1924 and 1925, but in 1926 the pre-war proportion was approximately restored.

Following are some striking features of the returns:—

- (a) Exports to Western Europe fell off by between a quarter and a half in the case of woollen tissues and by about five-sixths in the case of worsted tissues.
- (b) To Eastern Europe exports of woollen tissues were on the whole maintained, while exports of worsted tissues on the average of 1924–26 were less than in 1909–13.
- (c) Exports of woollen tissues to Japan, China and Hong Kong show a remarkable increase. But for the exports to these destinations the aggregate trade in woollen tissues would have shown a decrease instead of an increase. Exports of worsted tissues to the same destinations showed some increase upon the pre-war level in 1924 but a sharp falling off occurred in 1925–27.
- (d) In the United States market the shift from worsted to woollen has been very pronounced, the former showing a heavy decline and the latter a substantial increase. As in 1909–13 nearly 20 per cent. of British exports of worsted tissues were consigned to the United States, the falling off in shipments by about two-thirds is a most serious matter. According to the evidence of the West Riding Chambers of Commerce, the demand for worsted tissues in the United States and in Canada has been affected by a tendency to discard linings or to use only shoulder linings.
- (e) The South American market is important for woollens and also for worsteds. Exports of worsteds have fallen by nearly half, while the decline in exports of woollen tissues is in the neighbourhood of 30 per cent.

- (f) Of the Dominion markets, the Canadian, Australian and Indian are the most important; and, except in India, British goods occupy a predominant position in the import trade. All the Empire markets included in the tables show a large decline in worsteds, and all except Canada and South Africa some decline in woollens. Before the war Canada took about 18 per cent. of the British exports of worsted tissues. The quantity had fallen in 1927 by 50 per cent., which is, however, less than the diminution in the aggregate exports of worsted tissues.

(3) *Flannels and Delaines.*

The export of flannels and delaines is much smaller in value than the export of tops, yarns or woollen or worsted tissues. Some features of the trade are illustrated in the following table:—

British Exports (in thousands of square yards).

	1909-13 average (estimate).	1924.	1925.	1926.
To Foreign countries ..	1,443	2,147	1,475	699
To British countries ..	3,998	5,640	4,383	3,729
Total Exports ..	5,441	7,787	5,858	4,428
Of which to—				
China and Hong Kong ..	183	982	73	45
Japan	587	80	26	42
United States	381	1,741	1,252	344
Argentina	101	90	17	126
British India	842	1,029	762	810
Australia	1,063	610	376	227
New Zealand	455	385	411	302
Union of South Africa ..	184	165	145	184
Canada	476	1,779	1,875	1,400
British West Indies ..	408	95	92	107
Irish Free State	—	369	378	396

Exports of flannels and delaines in 1927 amounted to 5,545,900 square yards.

The figures for 1909-13 have been converted for the purposes of this table from linear yards to square yards on the assumption that 10 linear yards = 7 square yards. Among the more striking changes which have occurred since before the war are (a) heavy declines in exports to Japan, to Australia and the British West Indies; (b) substantial increases in exports to Canada, and (except in 1926) to the United States.

(4) *Blankets.*

The export of blankets, like that of flannels and delaines, is not comparable in value to the export of tops, yarns or tissues. The

trade is, however, old established, and it presents features of interest from the point of view of distribution and international competition.

British Exports (in thousand pairs).

	1909-13 average.	1924.	1925.	1926.
To Foreign countries ..	167	802	276	293
To British countries ..	805	1,344	862	852
Total Exports ..	972	2,146	1,138	1,145
Of which to—				
Union of South Africa ..	339	598	333	314
British India	38	78	88	57
China and Hong Kong ..	129	189	53	132
Australia.. ..	100	74	39	23
Canada	91	137	104	129
Irish Free State.. ..	—	139	54	34

In 1927 there were exported to all countries 1,133,607 pairs of blankets.

The bulk of the trade is with British Countries, the South African market being the most important. Exports in 1924 were exceptional in volume owing probably to the disposal of war stocks. The totals for 1925-27, however, also compare favourably with those for 1909-13, and except in the case of Australia, exports to the various markets shown in the Table have been on the whole maintained.

(5) *Carpets and Rugs.*

Turning to carpets and rugs, the comparative pre-war and post-war position of the export trade is as follows :—

British Exports (in thousands of square yards).

	1910-13 average.	1924.	1925.	1926.
To Foreign countries ..	3,115	2,158	2,044	1,793
To British countries ..	5,642	5,088	4,718	4,964
Total Exports ..	8,757	7,246	6,762	6,757
To Western Europe ..	895	498	468	474
„ Egypt	415	385	421	211
„ China and Japan ..	149	222	122	110
„ United States	138	354	284	302
„ Chile	346	53	83	43
„ Argentina	453	204	218	215
„ Union of South Africa ..	257	476	407	501
British India	220	163	222	186
.. ..	—	2,699	2,335	2,524
.. ..	558	700	791	796
.. ..	2,676	471	428	409
.. ..	—	336	271	240
.. ..	917	675	712	746

Exports of carpets and rugs to all destinations amounted to 6,593,300 square yards in 1927. This included 2,580,100 square yards exported to Australia, 739,300 square yards to New Zealand and 465,500 square yards to Canada.

It will be seen that exports of carpets are mainly to British countries. The whole of Western Europe is a much less important market than Australia, and in 1924, 1925 and 1926 was less important than New Zealand. The Empire trade is relatively more important than it was before the war, for although exports to British countries had declined in 1924-26 by 10-15 per cent., exports to foreign countries had declined by over one-third. Exports to South Africa, Australia and New Zealand showed a marked increase, but exports to Canada have fallen away heavily. Among foreign countries the United States showed a distinct increase compared with the pre-war level. British trade in the American market is said to be helped by the wider range of patterns produced in this country; and it has also been stated that the United States does not yet possess sufficient wide looms to make large carpets.

Import Trade.

Although in all branches of the wool textile industry exports from this country far exceed the imports of corresponding goods, it is necessary to consider the import trade (as a factor affecting the home demand for British products) in any attempt to estimate the condition of the British wool textile industry. It may be said at once that any decline which has taken place in the home demand for British wool textiles is not primarily attributable in the aggregate to imports from abroad, since these are on the whole far below the level of the years immediately preceding the war. This statement needs qualification, however, when the several sections of the industry are considered separately.

The following table summarises the figures for the principal branches of the import trade in the years 1924 to 1927 (so far as figures are available) in comparison with the average for the pre-war years 1909-13. In the case of woollen and worsted tissues it has been necessary to estimate the number of square yards imported before the war for comparison with post-war figures, as the unit of quantitative measurement before the war was the linear yard. Linear yards have been converted into square yards on the assumption that 1 linear yard of cloth was equivalent to 1.25 square yards.

Imports of Woollen and Worsted Goods.

	1909-13 average.	1924.	1925.	1926.	1927.
	Th. lb. not re- corded	Th. lb.	Th. lb.	Th. lb.	Th. lb.
<i>Wool Tops</i>		4,759	2,249	2,182	2,699
<i>Woollen and Worsted Yarns—</i>					
From Germany ..	3,987	160	358	1,582	} Not available
„ Belgium ..	15,139	6,599	6,309	6,562	
„ France ..	9,090	8,542	7,181	8,023	
„ Other countries	306	2,510	1,306	1,270	
Total Imports ..	28,522	17,801	15,154	17,437	17,955
Amount re-exported	401	161	231	162	100
Imports retained ..	28,121	17,640	14,923	17,275	17,855
<i>Woollen and Worsted Tissues—</i>	Th. sq. yds.	Th. sq. yds.	Th. sq. yds.	Th. sq. yds.	Th. sq. yds.
From Germany ..	22,520	2,041	3,335	9,245	11,850
„ France ..	56,075	21,627	25,293	20,976	19,351
„ Other countries	4,386	6,068	7,809	7,845	8,248
Total Imports ..	82,981	29,736	36,437	38,066	39,449
Amount re-exported	11,689	2,607	2,446	3,457	3,841
Imports retained ..	71,292	27,129	33,991	34,609	35,608
<i>Damasks and other Furniture-stuffs—</i>	} In- cluded with Tis- sues.	1,237	480	728	} Not avail- able.
Retained					
<i>Wool and Mohair Plushes—</i>		222	322	339	
Retained					
<i>Flannels and Delaines—</i>		67	126	36	18
Retained					
<i>Wool Carpets and Rugs—</i>					
From Germany ..	242	345	289	296	} Not avail- able.
„ Belgium ..	308	974	1,289	1,431	
„ France ..	192	858	1,272	1,225	
„ Austria and Hungary	*92	—	—	6	
„ Czechoslovakia		165	47	85	
„ Turkey and Iraq	350	541	481	383	
„ Persia ..	41	161	82	41	
„ British India	424	1,034	863	751	
„ Other countries	116	328	206	249	
Total Imports ..	1,765	4,406	4,529	4,467	6,572
Amount re-exported	474	862	786	762	1,073
Imports retained ..	1,291	3,544	3,743	3,705	5,499

* Austria-Hungary.

Tops and Yarns.

The import of tops is small, and is mainly from France and Belgium. The tops are said to be mainly "dry combed" tops suitable for mule spinning, as explained later; and it is believed

that, owing to the development of mule spinning of worsted yarn in this country, the tops have displaced a corresponding amount of imported yarn.

With regard to yarns, it may appear strange that a country which has developed woollen and worsted spinning so extensively as to carry on an enormous export trade in yarn should at the same time require to import a substantial quantity. While the export trade in 1909-13 averaged almost 87 million lbs. the import trade amounted to about 28 millions, or not far from one-third. The main explanation is the great diversity of types and kinds of yarns, and the fact that different countries have to some extent specialised on particular kinds. The export trade is chiefly in worsted yarns, but imports are mainly of carded (i.e. woollen) yarns. According to the report of the Departmental Committee on the Textile Trades after the War, the woollen yarns imported from France and Belgium are mostly fine yarns produced from short staple wool. "By means of their carbonising plants they have been able to deal successfully with the seedy and burry wools shipped to the Continent from Australia and South America, and also to produce good yarns from the noils and waste imported from the United Kingdom." These yarns are extensively used in the manufacture of dress goods, hosiery and underwear.

Tissues.

Imports of woollen and worsted tissues are of considerable magnitude. Before the war there was an important import trade from Germany, chiefly composed of single warp dress goods together with a certain quantity of linings and woollen velvets, plushes, and fancy articles. Since the war imports from Germany have fallen to much smaller dimensions, though they increased substantially during the years 1923-27. The loss of Alsace-Lorraine should be borne in mind in this connexion, since, according to the Departmental Committee on the Textile Trades*, a large percentage of the goods were made in Alsace. Germany's loss has been France's gain, but the figures show that imports even from France are far below the pre-war level, and they have declined substantially since 1925.

Imports from France consist largely of dress materials which compete with Bradford products, though the British and French products are not exactly similar. Between the worsted industry as carried on in France (and to a great extent on the Continent generally) and the worsted industry as commonly carried on in this country there are differences of technique which result in corresponding differences in the character of the yarn and of the finished product. The initial operation of wool-sorting differs fundamentally in principle from that performed in this country; for while in Bradford wool is sorted according to length of fibre, in Roubaix and Tourcoing it is sorted

* Cmd. 9070.

according to fineness.* The combs in use in France are largely of a different type from those used here, and combing is "dry" (i.e. the wool is not treated with oil as is usual in this country). As the preparatory processes place comparatively little strain on the wool, short and relatively inferior wools are used. The yarns are for the most part mule-spun and not frame-spun, as is customary in the United Kingdom. Mule-spun yarn is normally softer than frame-spun yarn, and is fitted for use in dress materials that are required to hang in smooth folds. These are the goods which are extensively exported to England. They are as a rule single warp fabrics and are not for the most part as durable as Yorkshire worsted cloth.

The total imports of tissues from France in 1925 were less than half the corresponding figure for the average of the years 1909-13, but the competition of certain classes of French goods was very severely felt by manufacturers in Bradford and other centres, and gave rise to an application under the Safeguarding of Industries procedure for the imposition of a duty on "tissues or fabrics (whether in the piece or any other form) of any weight from 2 ozs. per square yard up to and including 11 ozs. per square yard, made wholly or partly from wool or hair." The Committee to which the application was referred in October, 1925, reported† after enquiry that foreign goods of the class or description to which the application related were being imported into and retained for consumption in the United Kingdom in abnormal quantities, and that the competition of French goods was unfair so far as it arose from depreciation of the French currency, which operated so as to create an export bounty in favour of the French manufacturer. The Committee confirmed the opinion that the durability of the foreign goods is inferior to that of the British, but pointed out that single-warp and double-warp fabrics are in practice indistinguishable by the consumer. The Committee did not recommend the imposition of a duty, as the evidence on the question of unemployment did not support the view that employment in the industry was being seriously affected by the volume of retained imports. They recommended, however, that the position be kept under close observation by the Government, and that a duty be imposed should seriously increased unemployment arise from a substantial increase in the volume of retained imports as a result of further currency depreciation.

The French system of combing and drawing is carried on in Yorkshire to a small extent only, and opinion differs on the question whether by adopting the system more extensively and using short wool (such as is used on the Continent) the British industry could compete with the French fabrics. A witness on behalf of the Wool-combing Employers' Federation expressed the view that there would

* M. Marcel Dubrulle in "European Textiles" Supplement to Manchester Guardian Commercial, 10th December, 1925.

† Report of the Worsted Committee, dated February, 1926. (Cmd. 2635).

be very great difficulty in matching the French in their own special job. In this connection it may be noted that Mr. A. F. Barker, Professor of Textile Industries in the University of Leeds, calls attention* to the scientific insight of the French manufacturer which enables him to control strains in his cloth to the best advantage and thus produce a superior texture.

Imports of carpets and rugs in the years 1924-27 were far in excess of the pre-war quantities, the increase being mainly attributable to Belgium, France and British India.† Evidence given by representatives of the Carpet Manufacturers' Association in 1925 was to the effect that as regards the better qualities of carpets, including both fine Wiltons and Axminsters, British manufacturers were holding their own, but increasing competition was being experienced from the Continent in the cheaper qualities of Axminsters, in tapestry carpets and in hair carpets. The hand-made carpets of India and the Near East compete with British machine-made carpets of Oriental design, and this competition has become more serious for the British manufacturer.

Industrial Activity.

General considerations affecting comparisons.

In discussing the industrial activity of the wool textile industry in the post-war years, and particularly in comparing the situation with that prevailing immediately before the war, there are some important general considerations which must be kept in mind.

As regards productive capacity, it appears that comparatively little increase has taken place in the mechanical equipment of the wool textile industry (at least as regards spinning and weaving) since 1913.‡ During the war a certain amount of new machinery had to be installed to meet war conditions, and shortage of labour stimulated interest in mechanical improvements such as automatic looms, which were employed by very few firms before the war. After the war a large amount of machinery which had been worn out through the high pressure at which the industry had worked was renewed, and this demand, combined with heavy pressure on the textile machinery industry for machinery for export, precluded any material expansion in the amount of machinery installed.

On the other hand, as already mentioned, normal working hours were reduced soon after the war to the extent of about 13½ per cent. on the average, the reduction involving a considerable (though

* See Journal of the Royal Society of Arts, 14th November, 1924 : Report of Lecture on "Recent Progress in the Wool Industries," p. 875.

† This statement relates to the years 1924-26, as detailed particulars for 1927 are not available.

‡ In the combing section, the machinery increased between 1913 and 1925 by between 15 and 20 per cent.

The figures for 1907 include production in Ireland, comprising a relatively small quantity of woollen and worsted yarns. Wool combing is not carried on in Ireland, so that the particulars relating to tops and noils in 1907 are fully comparable with those for 1912 and 1924 which apply to Great Britain.

The production of tops, noils and yarns in 1924 was substantially greater than in 1907 but somewhat less than in 1912, the reduction amounting to about 6 per cent. in the case of tops, 12 per cent. in the case of noils, and 2 per cent. in the case of yarns. The production of woollen and worsted yarns actually increased slightly between 1912 and 1924, the falling off being confined to yarns of alpaca, mohair, etc.

Deducting exports of yarns and adding retained imports, the total quantity of yarns available for consumption in Great Britain was 501 million lb. in 1924, about the same figure as in 1912. The corresponding figure for the United Kingdom in 1907 was between 370 million lb. and 410 million lb. Considering woollen and worsted yarns separately, the amounts of home-produced yarn available for consumption in Great Britain were slightly over 300 million lb. of woollen yarn both in 1924 and in 1912; and about 165 million lb. of worsted yarn in 1924 as compared with about 146 million lb. in 1912.* To all these figures, any stocks carried over from the previous year should be added.

Although the total quantity of yarns which became available for consumption in Great Britain was about the same in 1924 as in 1912, it is likely that the quantity available for consumption in the wool textile industry may have been less, owing to increased requirements (particularly of worsted yarn) for other purposes, especially for the manufacture of hosiery. The extent of the reduction cannot, however, be determined.

Manufactures.

As regards manufactured goods, comparison of quantities produced in the Census years cannot (except in the case of blankets) be made directly, as the unit of measurement was changed between 1912 and 1924 from the linear yard to the square yard. On the basis, however, of certain assumptions as to the approximate relation between linear yardage and square yardage, the following figures may be given:

Production in Great Britain, 1907, 1912 and 1924, of certain wool manufactures returned on the Schedules for the Woollen and Worsted Trades (including goods produced on Commission.)

	1907.	1912.	1924.
	Th. sq. yds.	Th. sq. yds.	Th. sq. yds.
Woollen and Worsted, etc., tissues	505,000	550,000	442,707
Damasks, Tapestry and other furniture stuffs.	5,650	4,490	3,318
Wool and Mohair plushes		1,210	6,271
Flannels and delaines	33,680	31,394	26,062
	Th. prs.	Th. prs.	Th. prs.
Blankets	3,103	3,530	3,058

* Retained imports of woollen and worsted yarn together totalled about 17½ million lb. in 1924, as compared with about 30 million lb. in 1912.

On the basis of the above estimates, the production of woollen and worsted tissues would appear to have increased between 1907 and 1912 by about 10 per cent. and to have fallen in 1924 about 20 per cent. below the level of 1912. No account has been taken of changes in the weight of the cloth per square yard, and having regard to the tendency to produce lighter cloth the decline in 1924 compared with 1912 would no doubt be greater on the basis of weight than on the basis of square yardage.

In making returns for the Census of Production, manufacturers were required to distinguish woollen from worsted tissues, and in 1924 they were further required to distinguish tissues of alpaca, mohair and other hair, which were probably included with worsted tissues in 1907 and 1912. It is, however, not certain that the distinction drawn between woollen and worsted tissues by firms making returns was the same at each of the Censuses, and there is some doubt, therefore, whether the returns of the successive censuses as to the output of woollen and worsted tissues separately are fully comparable. This uncertainty has precluded any attempt being made here to discuss the two categories separately as regards either production or home consumption.

Among other manufactures, the production of wool and mohair plushes in 1924 showed a great advance (amounting to over 400 per cent.) upon the figure for 1912, while the production of damasks, tapestry and other furniture stuffs, of flannels and delaines and of blankets was substantially less than in 1912.

The production of carpets in 1924 amounted to a total of 21,617,000 square yards, but comparable quantitative particulars are not available for the earlier Census years. The value of the total production increased from £4,062,000 (including output in Ireland) in 1907 and £4,713,000 in 1912 to £9,844,000 in 1924.

Finishing.

The following table compares the quantities of wool textile goods finished in 1912 and 1924, as shown by the Preliminary Report of the Census of Production for the Bleaching, Dyeing, Printing and Finishing Trades.

Kind of work done.	1912.	1924.	1924 as percentage of 1912.
	lb.	lb.	Per cent.
Raw wool and Slubbing (Bleaching, Dyeing, etc.)	35,285,000	38,686,000	109·6
Woollen and Worsted Yarns (pure or mixed) Alpaca, Mohair and other Hair (Stoving, Dyeing, Finishing, etc.)	25,045,000	28,251,000	112·8
Piece Goods of Wool :—			
Woollen and Worsted Tissues, Pure or Mixed (Stoving, Dye- ing, Finishing, etc.)	Lin. yds. 280,493,000	Lin. yds. 233,139,000	90·5
Flannels and Delaines (Stoving, Dyeing, Finishing, etc.)			

The Preliminary Report of the Census of Production states that the branches of the finishing trades which dealt with wool and wool manufactures were in a much better position in 1924 than those handling other textiles, with the exception of the firms handling hosiery who had a large expansion of business.

Diversity in activity of different sections.

The foregoing comparisons between 1912 and 1924 illustrate what was stated earlier as to the possibility of diverse conditions prevailing in the different sections of the industry. Thus in the woollen section the production of yarn was greater in 1924 than in 1912, and the amount available for weaving does not appear to have been substantially different. No exact comparison can be made between the amount of woollen cloth produced in the two years respectively, but the evidence suggests that the output of woollen cloth was relatively better maintained in 1924 than that of worsted cloth. In the worsted section the production of tops was only slightly below the level of 1912, and the production of yarn was above that level. In the absence of information as to the quantities of yarn used by the hosiery industry in the two years, it is impossible to estimate the amount of worsted yarn available for weaving. In the finishing section, the amount of yarn dealt with was greater in 1924 than in 1912, and while the quantity of cloth dyed was less, the reduction was not nearly so great as in the total quantity of cloth woven.

In connexion with the diversity of activity (and consequently of prosperity) in the different sections of the wool textile industry at the same time, it should be pointed out that the factors on which the activity of the several sections mainly depends are not the same in each case. On the woollen side, as already explained, the industry is not so much sectionalised as on the worsted side, and since the quantities of woollen yarn which are sold outside the wool textile industry (e.g. to the hosiery industry or for export) are relatively small, the activity of the woollen spinning section depends mainly on that of the woollen weaving section, that is, on the demand for woollen cloth. On the worsted side the position is different. Not only is there a much greater division into separate sections (combing, spinning, weaving), but the earlier sections depend much more extensively on extraneous factors. For example, about one-seventh of the total production of tops is exported; and of the total output of worsted yarn not only is a large proportion (21 per cent. in 1924 and 28 per cent. in 1912) exported, but considerable quantities are sold to the hosiery industry. Hence, the activity of the combing and worsted spinning sections depends on demand in the export markets and on the prosperity of the hosiery industry, as well as on the demand for worsted cloth.

In the case of tissues the question is how far the demand depends on the home market or on overseas markets, and some particulars have already been given (page 190) as to the proportion of exports to production in the principal categories of manufactures in the years 1907, 1912 and 1924. From those figures it will be seen that in the case of woollen and worsted tissues, exports represented for 1912 about two-fifths, and for 1907 and 1924 almost one-half, of the total production. Unfortunately, the available data do not enable similar proportions to be ascertained for woollen and worsted cloth separately.

Home consumption of woollen and worsted tissues in 1924.

The question of the amount of woollen and worsted tissues available for home consumption may now be considered in greater detail. It should, of course, be borne in mind that exports in any year are not entirely derived from the production of that year, and comparisons between exports and production must, therefore, be made with caution. In order to give as complete a picture as possible it appears desirable to take account also of retained imports, and the following table accordingly shows in respect of the three Census years the estimated quantity of British production, the British exports, the production retained in this country, the retained imports and the total quantity available for consumption in this country. It should be added that in order to make the figures as far as possible comparable, exports to the Irish Free State have been deducted from the British exports in 1924.

Woollen and Worsted Tissues (Millions of Square Yards).

		Production in Great Britain.	British Exports.	Production retained in this country.	Retained Imports.	Total avail- able for consumption in this country.
1907*	..	505.0	237.0	268.0	84.0	352.0
1912*	..	550.0	224.0	326.0	72.0†	398.0
1924	..	442.7	217.5	225.2	27.1	252.3

* Square yardage estimated in these years.

† Including a small quantity of flannels and delaines.

On the basis of these figures, it would appear that while British exports in 1924 were but slightly reduced in comparison with 1912 and 1907, the quantity of British produced woollen and worsted tissues retained for consumption was roughly 30 per cent. below the corresponding figure for 1912 and roughly 15 per cent. below the

level of 1907. Retained imports were reduced in greater proportion and the total quantity of home produced and imported cloth retained for consumption appears to have been between 35 and 40 per cent. below the level of 1912 and between 25 and 30 per cent. below level of 1907. A similar calculation is not practicable for wool and worsted cloth separately, but the available data suggest that the reduction in home consumption in 1924 as compared with 1912 affected both categories. The reasons for the post-war decline in the demand for cloth will be discussed below, but before doing so it is convenient to glance briefly at the course of events in the wool textile industry during the more recent post-war years.

General Course of Industrial Activity, 1924 to 1927.

No official data are available for the purpose of analysing the situation in detail in later years than 1924, but a general indication as to the position in the various sections of the industry may be given. As pointed out above, the combing and worsted spinning sections are dependent to a considerable extent on the export trade and on the demand of the hosiery industry for yarn. The exports of tops, which in 1924 were approximately at the pre-war (1909-1913) level, fell to a much lower level in 1925 and 1926, but recovered to the pre-war level again in 1927. In the case of worsted yarn the exports in 1927 were approximately the same as in 1924 (though both years much below pre-war level), but a heavy decline from 1924 was recorded in 1925, and a further heavy decline in 1926. As regards the effect of conditions in the hosiery industry, exact information as to the amount of worsted yarn used in that industry is not available, but the results of the third Census of Production indicate that, in 1924 at least, the hosiery industry as a whole was relatively well situated; and the statistics showing the numbers of insured persons and the percentage of unemployment suggest that during the post-war period generally the hosiery industry has been less depressed than the wool textile industry.* These statistics of course, apply to the hosiery industry as a whole, not specifically to the section producing woollen hosiery; but the indications appear to suggest that the demand for yarn for hosiery and knitted goods during the post-war years has been a substantial factor in the situation. In particular, the fashion for wearing knitted dresses and other garments, which was very marked during part of the post-war period, operated to maintain demand for yarn while reducing demand for woven cloth.

As regards tissues, the exports of worsted tissues have fallen steadily since 1924, being throughout far below the pre-war level

* The number of insured persons in the hosiery industry increased steadily (except in 1926) from 89,200 in July, 1923, to 100,650 in July, 1927; and the percentage of unemployment as recorded at the end of each half year during the same period was always below that for the woollen and worsted industry. (See page 307.)

The exports of woollen tissues were also lower in 1925-27 than in 1924, but except in 1926 were somewhat above the pre-war level. No statistical information is available as to the changes in the home demand for tissues, but the other data suggest that the year 1925 witnessed a considerable decrease in the activity of the wool textile industry* and that, in spite of some dislocation in 1926 due to the Coal Stoppage and General Strike, a recovery took place in that year. Thus, the quantity of wool which became available for consumption declined in 1925 (as compared with 1924) but rose substantially in 1926. Similarly, an "index of employment activity" devised by Mr. George H. Wood and explained in a paper read by him before the Royal Statistical Society on 15th February, 1927, indicates that in the wool textile industry as a whole industrial activity in 1925 was below the level of 1924, with a recovery in 1926 apart from an interruption in the middle part of the year. Separate indices are given for the various sections of the industry, including the woollen and the worsted sections of the West Riding of Yorkshire. These indicate that the woollen section of the West Riding not only suffered a decline in 1925 as compared with 1924, but that activity continued on a still lower level in 1926. In the worsted weaving section of the West Riding, the general movement indicated was similar, but the amount of the decline as between 1924 and 1926 was much smaller than in the woollen section.

The fluctuations which have taken place in the industrial activity of the industry are reflected in the numbers and percentages of insured persons in Great Britain† who were unemployed, for whereas in December, 1924, and December, 1925, the numbers unemployed were 23,600 and 22,500, and the percentages 9·1 per cent. and 8·8 per cent., the numbers in June, 1925 and June, 1926, were 51,000 and 64,000, and the percentages 19·6 per cent. and 25·1 per cent. Since that date the number and percentage of unemployed has fallen, but considerable depression still prevailed in important sections of the industry in 1927.

The total number of persons in the woollen and worsted industry in Great Britain who were insured under the Unemployment Insurance

* A rapid rise in the price of wool took place during the latter part of 1924, under the influence of fears as to an impending wool shortage; but prices rapidly declined again during the next six months, with the result that the industry was handicapped during the whole of 1925 by the existence of wool stocks bought too dear. Moreover, the break in raw wool prices occasioned caution and uncertainty among consumers in all sections of the industry. Throughout the post-war period the high, and perhaps particularly the fluctuating, price of wool has constituted a serious adverse factor in production.

† See page 307. The figures in this and the next paragraph do not include persons engaged in finishing or in carpet manufacture.

Acts fell steadily between the dates July, 1923, and July, 1927, the figure at the end of the period being 247,970 as compared with 268,230 at the beginning.

In the carpet section, the number of insured persons under the Unemployment Insurance Acts, which was 24,780 in July, 1927, showed a continuous decline from July, 1924 (27,120), in which year a sharp rise occurred over the preceding year, the total of 1923 being 25,330. The percentage of unemployment, however, as reckoned at the end of each half year between June, 1923, and December, 1927, has been on the whole relatively low, and though it rose to 10·5 in June, 1925, and 22·9 in June, 1926 (the period affected by the Coal Stoppage and General Strike), it was below the average for the remainder of the woollen and worsted industry throughout the whole period. (*See Table on page 307.*)

Since, as already explained, the wool textile industry is carried on mainly by private firms or private companies, comprehensive data are not available as to the financial results of its operation. In the cases of wool combing and of finishing (dyeing), however, financial particulars are available regarding large joint-stock enterprises engaged in these operations. As regards finishing, the financial results for the Bradford Dyers, Limited (the principal undertaking concerned) are set out in the chapter on the Cotton Industry, page 42. As regards combing, the large joint-stock company engaged in wool combing (Woolcombers, Limited) has regularly paid substantial dividends and has made several issues of bonus shares during the post-war period; and, as stated earlier, the contrast between this position and that in other sections of the wool textile industry has given rise to considerable criticism of wool combing charges.

Factors affecting demand for tissues.

The main reasons put forward in the evidence of the West Riding Chambers of Commerce for the decline in the exports of worsted tissues (a decline practically confined to the category of stuffs, dress goods and linings) were as follows :—

- (a) Changes of fashion, particularly as regards women's dress. These include (i) preference for cotton, silk and artificial silk wear, (ii) wearing of knitted rather than woven garments, (iii) diminished amount of material per dress, and (iv) lessened demand for linings.
- (b) High cost of production owing to the highly specialised nature of the processes.
- (c) High cost of dyeing, particularly as regards cheap cotton warp goods, both woollen and worsted, since two dyes are required, one for the cotton and one for the wool.
- (d) More intense competition from the Continent, assisted in some cases by depreciating exchanges.

So far as the home trade in woollen and worsted tissues is concerned, the last-mentioned factor has, as already pointed out, been of importance only in certain sections of the trade, and the element of depreciating exchanges is, as indicated below (p. 221), one of diminishing significance. The other factors mentioned, particularly perhaps the first, have no doubt seriously affected the demand for wool textile products.* In addition the following causes for the decline in the home trade have been suggested :—

- (i) Reduced spending power of large sections of the population due to such causes, on the one hand, as decline in real wages or increase of unemployment, and, on the other hand, to heavy taxation.
- (ii) Diversion of expenditure from clothing to other objects, for example motor cars, motor cycles, wireless apparatus, cinemas and other amusements.
- (iii) The high retail price of wool textile goods.

Many of the various factors mentioned above are obviously not capable of exact evaluation, but some comments may be made regarding the questions of reduced spending power, high cost of production, dyeing charges, and prices of wool textile goods.

Spending Power.—The data given in the "Survey of Industrial Relations" (p. 97) indicate that average weekly full-time rates of wages, after being above the cost of living index figure from the end of 1920 to the middle of 1922, remained somewhat below it on the whole till the end of 1924. In 1925 and 1926 the two figures corresponded closely, and in 1927 the cost-of-living index has been the lower of the two. It must be remembered, however, that the course of wages in the various individual industries has been by no means uniform, in some cases being above and in others below the cost of living index. While a reduction in real wages might lead to a curtailment of purchases of clothing in favour of more essential commodities, an increase in real wages would not necessarily be expended on clothes, but might serve to extend the range of articles purchased. On this reasoning, some reduction in the general demand for wool textile goods in the post-war years might be expected. It is true that there is a considerable body of evidence to indicate that the population as a whole is (at least in appearance) better clothed than it was before the war, but this is not necessarily incompatible with a reduction in the amount of wool textiles used, if account be taken of the changes in fashion referred to above.

* Assuming a reduction of 3 square yards in the amount of material now required for a woman's dress as compared with the few years immediately before the war, and applying this to the number of females in Great Britain over 16 years of age in 1921, viz., about 16 millions, the aggregate reduction would be 48 million square yards, which is nearly one-quarter of the total amount of "stuffs, dress-goods, etc.," produced in 1907. If the average number of dresses bought per annum has increased, this would counteract *pro tanto* the reduction, except in so far as the dresses were of knitted material.

Costs of Production.

As regards costs, the Woollen and Worsted Trades Federation gave the following figures showing the total costs of production of wool tissues early in 1925 as percentages of the 1914 costs :—

Type of Cloth.	Comparative Costs in 1925. (1914 = 100).
Woollen suitings, overcoatings, etc.	223
Covert coatings	249
Worsted suitings	258
Serges for men's wear	230
Dress serges, Gabardines, and similar cloths ..	224
Linings	220
Cotton and silk dress goods	253
Flannels	239
Blankets	219
All the above cloths (based on 66 separate examples)	229

The increases in costs were much in excess of the increase in wholesale prices of commodities in general, which were about 60 per cent. above the 1913 level according to the Board of Trade index. Since the beginning of 1925 the fall in the price of wool has brought with it some reduction in the cost of cloth. Thus the price per yard of 16 oz. Indigo Serge 64's, which was 11s. 9d. at the close of 1924, was reduced to 8s. 9d. at the end of 1925 at which figure it stood also in December, 1927. The following table* compares the price movements of representative kinds of raw wool, tops, worsted yarn and cloth in the years 1924 to 1927 on the basis of the prices current in July, 1914, and shows that the reduction in the price of the wool was accompanied by reductions in the price of the tops, yarn and cloth.

Prices as percentages of the price in July, 1914.

Average for	64's av. Australian Wool.	64's Tops.	2-48's (64's) Yarns.	16 oz. Indigo Serge (64's).
July, 1914 ..	100·0	100·0	100·0	100·0
Year 1924 ..	246·8	225·6	219·6	245·0
Year 1925 ..	184·3	172·4	185·0	210·1
Year 1926 ..	150·0	149·5	164·6	192·1
Year 1927 ..	156·8	151·5	164·5	192·1

In 1924 the price of indigo serge cloth showed about the same proportionate increase upon the pre-war level as did the price of

*Compiled from figures published in the Bulletin of the Wool Textile Delegation.

64's average Australian wool, the increase in the price of tops and yarns being distinctly less. In 1925, 1926 and 1927, however, the proportionate increase upon pre-war level in the price of the cloth was substantially greater than the increase in the price of the raw wool and the tops (which advanced less than raw wool). The index figure for the yarn also was somewhat above the index figures for the raw wool and the tops.

Charges for Dyeing and Finishing.

The preliminary Report of the third Census of Production shows that the value of stoving, dyeing and finishing work done on woollen and worsted tissues in 1924 averaged 4·27*d.* per linear yard treated, as compared with 1·67*d.* in 1912. Such average figures cover a very wide range of actual dyeing charges per yard of cloth. Particulars of dyeing charges for a considerable number of specified descriptions of cloths were submitted to the Committee in evidence in 1925, and these showed charges varying from 6·8*d.* to 14*d.* per yard for worsted coatings, from 3·6*d.* to 8·9*d.* for lustre and mohair linings, from 2·8*d.* to 8·2*d.* for lustre and mohair brills, and from 2*d.* to 8·5*d.* for the other cloths included in the particulars. The variations in each group, and the differences between groups, were stated to be due to the great variety of cloths, dyes and dyeing processes, etc.

The average dyeing price for wool tissues was stated in evidence to have increased by 124 per cent. in 1924 as compared with 1914*. The increase in the average value of dyeing per yard shown by the Census of Production in 1924 over the average for 1912 was 156 per cent. This increase, no doubt, reflects not only the actual increase in price per yard for applying the same process to similar cloth, but also the changes that have taken place in the style and extent of treatment applied. In both cases these average increases represent a wide range of actual increases in specific cases.

Dyeing costs are stated to have been affected by the post-war reduction in the average number of pieces of cloth in an order; and in a new price list for the dyeing of woollen dress goods which was issued by the Bradford Dyers' Association in December, 1927, provision was made for giving some advantage to customers ordering increased quantities to a shade. In explaining the new list, one of the directors of the Association is reported to have stated (with reference to the Bradford dress and costume trade in coloured cloths) that before the War the number of pieces ordered to a shade was about 4½ on the average, whereas at the end of 1927 it had fallen to less than 2½, and that this had very seriously increased the dyers' costs per piece.

Sufficient particulars are not available for estimating the average ratio of dyeing charges to the value of cloth or the changes in that ratio in post-war as compared with pre-war years. The average

* The corresponding index figure was 117 for the years 1925 and 1929, and 112 for 1926.

value of all the woollen and worsted tissues recorded in the Census of Production was 40·6 pence per square yard in 1924, as compared with an estimated value in 1912 of about 16 pence, an increase of 153 per cent. The percentage increase in the average recorded value of dyeing per linear yard in the two years was 156 per cent. Apart, however, from the fact that the one figure is based on square yards and the other on linear yards, it must be emphasised that in both years the tissues included a considerable quantity of cloth woven from dyed yarns, which should properly be eliminated before the ratio is calculated; and even then the range of kinds, weights and values of grey woollen cloth included in the totals is so great as to make the value of the calculation somewhat uncertain.

In the special case of indigo serge, information is available as to average prices of the finished cloth, and of the dyeing over a series of years beginning in 1914, and these yield the following table:—

	1914.	1919.	1920.	1921.	1922.	1923.	1924.
(a) Price of Indigo Serge 64's (pence).	54·0	300·0	192·0	114·0	120·0	117·0	141·0
(b) Dyeing Price (pence)	6·6	15·65	19·8	16·4	15·4	14·8	13·0
Ratio of (b) to (a) (per cent.).	12·2	5·2	10·3	14·4	12·8	12·6	9·2

The percentage increase over 1914 in the dyeing price for 1924 given in the above table is 97 per cent., which is considerably less than the percentage increase (124 per cent.) given above for wool tissues in general. In the three years 1925–7 the dyeing price has been 12·6 pence, or about 12 per cent. of the price of cloth.

Retail Prices.

With regard to retail prices of cloth, the following are the index figures compiled by the Ministry of Labour regarding the increase in the retail prices of clothing in relation to the cost of living of the working classes. The index figures are necessarily in the nature of approximations, but they may be taken to represent broadly the general course of prices of the cheaper grades of clothing.

	Ministry of Labour Index Number of Cost of Living of the Working Classes.	Index showing movement of prices of articles of working-class clothing.		
		Men's suits and over- coats.	Woollen materials for Women's outer clothing.	Woollen under- clothing and hosiery.
July 1914 ..	100	100	100	100
Year 1922, average	183	210	270	260
„ 1923 ..	174	190	260	240
„ 1924 ..	175	190	260	240
„ 1925 ..	176	190	270	250
„ 1926 ..	172	190	260	240
„ 1927 ..	167	180	250	240

It is noteworthy that the prices of all three classes of articles have risen more than the general index, the difference being substantial in the case of woollen underclothing and hosiery and woollen materials for women's outer clothing. In the latter case, the retail price index showed a considerably greater rise than the cost of production index in 1925, so far as the figures are comparable.

General Position.

In Messrs. H. Dawson & Co's. Statistical Review of the Wool and Wool Textile Trades, published in 1927, it is pointed out that a general expansion of trade is required, both at home and in overseas markets, and the following appreciation of the position is given. "While the outlook for the Home Trade presents many difficulties, it is probable that the more adverse factors are beginning to lose force. British industry is gradually recuperating and developing, with prospects of a steadily improving purchasing power at home. The cost of living is still declining, and, although luxuries and amusements compete with expenditure on clothes, the balance of money available for expenditure is perhaps greater. Foreign competition abroad is less overwhelming, and, with a lessening disparity in competitive advantage, the excellence of English goods is creating a greater call. France and Italy are finding more difficulty in manufacturing, and their export trade has not been maintained at the high level reached two years ago. Germany is again in the ascendant and returning to her former position as a textile country."

IV. BRITISH EXPORTS IN RELATION TO FOREIGN COMPETITION.

Expansion of Manufacture in other Countries.

Appendix 2 contains notes on the wool textile industry and trade of certain other countries which are important either as producers or as consumers of wool textile goods.

From the point of view of the amount of their manufacturing equipment, the most important wool textile countries of the world are the United Kingdom, the United States, Germany and France. Of substantial importance are also the wool textile industries of Italy, Czechoslovakia, Belgium, Poland and Japan, and in addition probably Russia.

Germany, France, Belgium and Czechoslovakia have old established wool textile industries. The output, notably perhaps in Germany and Austria, was growing substantially before the war. Since the war, however, the German industry has been weakened, especially in the worsted branch, through the cession of Alsace to France. It has also suffered as a result of economic disorganisation and the loss of business connexions, especially in the export markets. The French wool textile industry has been

strengthened by the addition of Alsace and probably also to some extent by the reconstruction since the war of the establishments situated in the devastated area. The wool textile industry of Czechoslovakia represented some 80 per cent. of the wool textile industry of the Austro-Hungarian Empire. The latter was largely engaged before the war in supplying the needs of the Austro-Hungarian market, but as a result of the splitting up of Austria-Hungary and the erection of barriers to trade by the component parts, the Czechoslovakian industry has to some extent lost its market and it is faced with the necessity for finding new outlets elsewhere if it is not to be permanently reduced in size. A similar problem confronts the Polish industry, which was based before the war very largely on the Russian market. The wool textile industry of Poland was a relatively new development before the war.

The development of the Italian wool textile industry is also modern. Since the war it has expanded rapidly, partly as the result of water-power developments; and it is now to be numbered among the principal wool textile industries of the world.

The Japanese wool textile industry is largely new, and appears to be rapidly growing. The use of European dress is said to be expanding in Japan and China, and the Japanese industry aims largely at meeting this demand. Up to the present the demand has been greatly in excess of the output of the Japanese mills.

The manufacture of wool textiles has expanded in a number of other countries since pre-war days. Thus the local mills in Australia are able to meet a considerable part of the local need, especially as regards the cheaper qualities of cloths. New Zealand and some South American countries have begun to manufacture wool textiles or somewhat expanded their production in recent years. In Canada, where the industry was not unimportant before the war, a considerable development in the productive plant occurred during and immediately following the war; but it has not proved possible to keep the whole of the plant in operation.

Exports from principal exporting Countries.

The great bulk of international trade in wool textiles is carried on by the United Kingdom, France, Germany, Belgium, Italy and Czechoslovakia. The wool textile industry of the United States, which has developed with great rapidity, is engaged almost exclusively in supplying the American home market, and does not ordinarily count as a serious competitor in other markets. In particular branches of exports other countries are important (notably Turkey, Persia, India and China in the carpet and rug industry), but the European countries previously mentioned are responsible for roughly 90 per cent. of the aggregate export trade in wool textiles. At the same time these countries are large consumers of each other's

products, especially of tops and yarns for further manufacture. The following table gives a comparison in terms of quantities (metric tons) of the export trade in 1909-13 and in 1924, 1925 and 1926 of the large exporting countries (excepting Czechoslovakia, for which there is no pre-war comparison), together, in the case of carpets, with India and Persia :—

(Quantity in Metric Tons. One Metric Ton = 2,204 lb.)

From				1909-13 Average.	1924.	1925	1926.
<i>Tops.</i>							
United Kingdom	..	..	..	18,989	18,661	14,538	15,255
France	..	..	..	26,417	18,518	15,914	25,435
Germany	..	..	..	9,839	6,430	6,216	6,301
Belgium	..	..	..	(?)	(?)	1,997	2,943
Italy	..	..	..	9	596	200	409
Total	..	..	..	55,254	44,205	36,868*	47,400*
<i>Woollen and Worsted Yarns.</i>							
United Kingdom	..	..	..	39,470	29,897	26,050	21,475
France	..	..	..	11,207	14,267	13,327	17,334
Germany	..	..	..	12,543	7,316	7,202	8,672
Belgium	..	..	..	11,006	8,373	9,204	9,707
Italy	..	..	..	495	775	831	940
Total	..	..	..	74,721	60,828	56,614	58,128
<i>Manufactures (except Carpets).</i>							
United Kingdom	..	..	..	70,000	70,500	54,000	47,000
France	..	..	..	15,332	24,566	19,987	18,870
Germany	..	..	..	26,477	12,221	13,121	16,510
Belgium	..	..	..	1,476	2,034	2,113	2,105
Italy	..	..	..	1,767	9,285	11,790	10,871
Total	..	..	..	115,052	118,606	101,011	96,356
<i>Carpets.</i>							
United Kingdom	..	..	..	13,900†	11,500	10,750	10,750
France	..	..	..	829	2,200	2,480	2,360
Germany	..	..	..	2,201	2,882	2,463	2,706
Belgium†	..	..	..	284	695	470	883
Italy	..	..	..	9	8	10	18
India§	..	..	..	805	2,591	1,758	1,745
Persia	..	..	..	3,084	4,178	5,053	5,053††
Total	..	..	..	21,109	24,054	22,984	23,515

* Excluding Belgium. † Average of 1910-13. ‡ With curtains and table cloths.
§ Years ended March following that stated. †† Figure for 1925.

In the case of the United Kingdom the pre-war weights of tissues and carpets exported are estimates ; but the post-war weights are in the main ascertained weights.

While it is no doubt in tissues and carpets that the greatest differences occur between the products of different countries, there are also important differences in the case of tops and yarns (apart from the distinction between woollen and worsted yarns). For example, French tops are largely dry-combed while British tops are mainly combed in oil. Again, French worsted yarn, being very largely mule-spun, is also different from most British yarn, and a considerable quantity is in fact exported to the United Kingdom. In spite of the differences between their products, the respective industries are no doubt to a marked extent in competition in world trade.

In considering the figures given in the table, the territorial changes which have occurred since 1913 must be borne in mind, as these have not only enlarged or diminished the productive capacity of the countries concerned, but have also transformed some trade formerly internal (e.g. between Alsace and Germany) into international, and some formerly international (e.g. between Alsace and France) into internal trade.

Tops.

In the top trade the United Kingdom appears, on the average of the years 1924-26, to have somewhat more than maintained its pre-war proportion of the aggregate, though this aggregate was reduced by over 20 per cent. It is noteworthy that France, which before the war exported a substantially greater quantity of tops than the United Kingdom, exported actually a smaller quantity in 1924 and only a slightly greater quantity in 1925. In 1926, however, her exports of tops advanced to a figure far above that of this country. The effect of the inclusion of Alsace Lorraine—a large centre of worsted production—upon the post-war figures is indeterminable. The German export trade in tops is considerable, though it is smaller than the import trade ; and it is diminished by one-third in comparison with the annual average of 1909-13. Apart from the countries shown, Australia developed, originally with the assistance of a subsidy, a not inconsiderable export of tops. The quantity exported exceeds 2,000 tons per annum.

Yarns.

The aggregate export of yarns from the five countries for which figures are given showed on the average of the years 1924-26 a reduction of between 20 and 25 per cent. from the pre-war level. The falling-off in exports from the United Kingdom exceeded one-third so that this country has apparently not held its relative place.

The French figures for the post-war years are probably to some extent inflated in comparison with those for 1909-13 by the inclusion of Alsace.

Manufactures.

The export trade in woollen and worsted manufactures (other than carpets) of the five countries appeared to be slightly greater in 1924 than it was in 1909-13, but distinctly lower in 1925, and lower still in 1926. The British share before the war may be estimated at about 60 per cent., and the corresponding percentages for 1924, 1925 and 1926 were 59, 53 and 49, so that British exports when reckoned in weight would appear to have lost ground, at any rate in the two later years.* It is, of course, true that a crude comparison of weights such as is here given may convey a misleading impression of changes in the volume of trade and may not adequately represent the true relation between the exports of one country and those of another, since no account is taken of qualitative differences. In this connexion the tendency to produce cloth which is lighter per square yard, and presumably more valuable in proportion to its weight, should not be ignored, though it is not known whether this tendency affects British more than foreign cloth. It will be remembered that in an earlier section of this chapter (pp. 173-5), an estimate was made on the basis of values as to the pre-war and post-war share of British exports of wool manufactures in the total export trade of the principal countries in wool manufactures. The conclusion there reached was that the relative position of the United Kingdom was practically as favourable in 1924 and 1925 as it had been before the war, and only slightly less favourable in 1926. On that view Great Britain appeared to have maintained her place in the world's trade better than is suggested by the comparison of weights. It should, however, be borne in mind that the previous comparison of values was on a wider basis than the present comparison in that it took into account wool hosiery, as well as woollen and worsted manufactures and carpets, and was based on figures relating to a larger number of countries. Part of the difference may be due to these causes. On the other hand, it is possible that an estimate on the basis of values tends to represent the position of British exports in rather too favourable a light, as the export values of countries with depreciated currencies tend to be unduly low. In this connexion it may be observed that some progress in the direction of stable currency has been made by the chief wool textile exporting countries since 1924. The German currency was stabilised towards the close of 1923, the Belgian currency in October, 1926, and the Italian currency (after a period of deflation) in December, 1927. The French currency, though virtually stable during 1927, was not

* The percentages stated would be very slightly reduced were British exports to the Irish Free State, which counted before the war as internal trade of the United Kingdom, deducted from the totals for 1924, 1925 and 1926.

technically on a gold basis. The Czechoslovak currency has also been virtually stable for a number of years. The Japanese currency depreciated to a certain extent between 1924 and 1927.

The figures on p. 219 show that France, Belgium and Italy have increased the weight of their export trade in 1924-26 compared with 1909-13. In the case of Italy the advance was of remarkable extent, representing almost a sixfold increase. In the case of France also the advance was substantial in amount, though part was doubtless due to the strengthening of the French industry resulting from the inclusion of Alsace. The same circumstance would also partly account for the very heavy decrease in exports of tissues from Germany, but it can hardly account for the whole of the drop.

The emergence of Italy as a strong competitor in the export trade is the result of developments in the industry which have been particularly rapid since the war. The poverty of the Italian internal market and a depreciating currency doubtless tended powerfully to stimulate the export trade.

The French and Belgian export trades have also been stimulated by similar conditions, but while in the case of Italy it is clear that the aggregate production is greater than was the case before the war, the same is by no means certain in the case of France and Belgium, notwithstanding the incorporation of the Alsatian industry with that of France.

In addition to the countries for which figures have been given Czechoslovakia is a substantial exporter of manufactures as well as of yarns. The figures are given on pp. 254-5. While the Czechoslovakian industry has not yet fully regained its pre-war trade in tissues with countries outside the old Austro-Hungarian Empire nevertheless in certain branches of the export trade (woollen shawls to South Africa, carpets to the United States) it has substantially exceeded the pre-war attainments of the Austro-Hungarian Empire. As, owing to customs barriers, Czechoslovakian trade with the other Succession States is seriously hampered, her competition in more distant markets seems likely to increase.

Up to the present Poland does not appear to have met with any great success in finding new markets to which she can send her goods, failing the re-establishment of her pre-war market in Russia. She has, however, to some extent cut into the trade in yarns with Germany.

The figures for the carpet trade point to increased competition from some European countries (France, Germany and Belgium) as well as from India and Persia. In addition Czechoslovakia is exporting a larger quantity of carpets (after deducting exports to the Succession States of Austria-Hungary) than the whole of Austria-Hungary was exporting before the war. Statistics as to export

from Turkey are not available. Although the table shows that British exports fell off while the aggregate exports for the countries for which figures are given advanced, the position is, perhaps, less unsatisfactory than these figures suggest, as there is evidence that British trade has been relatively well maintained in the better qualities of carpets.

Competitive position of British exports in various markets.

General factors affecting position.

Turning now from the general relation between British exports and the exports of foreign countries to the problem of the position of British goods in different consuming countries, it is convenient in the first place to notice certain outstanding features which affect the volume of the trade in wool textiles in different markets, and in particular the volume of the import trade into these markets.

However the aggregate world consumption of wool textiles since the war may compare with the pre-war consumption, there is no uniformity as between different countries in the changes which have taken place. The consumption of finished wool textile goods in nearly all European countries has undoubtedly diminished, as a result of reduced purchasing power and high prices. It is partly that people buy new clothes less often (and in this connexion the Committee were told by a witness who is in the habit of travelling on the Continent that the extreme shabbiness of the mass of the people over large parts of Europe was most noticeable), and partly that the clothes purchased contain a smaller weight of wool. Fashion has favoured the production of lighter weights of cloth, and in women's dress has considerably reduced the yardage of cloth required.

On the other hand, the consumption of wool textiles has in recent years expanded to a remarkable extent in Japan and China, as a consequence of the tendency to adopt European dress. In some other countries also, notably the United States, there is evidence that the aggregate consumption of wool textiles has substantially advanced since the war, whether as a result merely of growth of population or, in addition, of increased average prosperity need not here be discussed.

Apart from the magnitude of the different markets, British trade is concerned with the question whether particular markets are open to competition, or whether they are in fact substantially reserved for a local manufacturing industry. This raises the question of tariffs and the fostering of manufacturing industries in new countries.

The tariff systems of most countries before the war provided for the imposition of duties upon imports of finished woollen and worsted goods and duties (generally considerably lower) on semi-manufactured products such as tops and yarns. The level of the

tariff varied greatly as between different countries at the same time, and in certain cases as between the same country at different times.

Partly as a result of tariffs the wool textile industry was before the war one of the most widespread of all manufacturing industries, though in most countries it was essentially of local importance, and in some it was carried on chiefly as a domestic industry. As in other branches of trade, the shutting off of European supplies of manufactured goods during the war stimulated local production and enlargement of plant in a number of countries. In most of them, however, the growth of productive capacity does not appear to have been very great, owing no doubt largely to the difficulty in obtaining machinery during and for a time after the war. The increase in capacity was most marked in the United States, where the industry was already very large. Canada, Japan and Australia have also considerably developed their industry, as well as some European countries.

With two exceptions, increases of tariff rates on wool textiles (when calculated *ad valorem*) have not been substantial among the larger countries, and in several cases the rates in force in 1926 represented a lower percentage of the value of the goods than did the rates in force immediately before the war. This was the case for example with Germany, France, Belgium, Italy, Sweden, Argentina and Brazil. The two important exceptions referred to are the United States and Australia, both countries which have developed their manufacture considerably since 1913. Particulars of the tariff increases effected in those countries are given on p. 259 and p. 263 respectively.

Some other countries (including India, South Africa and New Zealand) also have increased their rates of duty upon wool textiles, but the increases are as a rule not of great significance.

There remains to be considered in conclusion the position of British trade in the large consuming markets, regarding it from the point of view particularly of competition with other countries engaged in international trade in wool textiles. The figures on which this sub-section is based will be found in Appendix 2, p. 242.

Europe.

The European market—and especially Germany—is of outstanding importance as a purchaser of tops and yarns. Of the German top trade the United Kingdom in 1924 and 1925 (though not in 1926) more than maintained its pre-war proportion, but the total volume was heavily reduced. Imports of yarns into Germany in 1924, 1925 and 1926 were in the aggregate almost up to the pre-war level, but the proportion of imports from the United Kingdom was lower, this country having lost ground to Belgium, France and other countries.*

* The British Trade Accounts for 1927 indicate that there was in that year a marked recovery in the quantity both of tops and of yarns exported from Great Britain to Germany.

The position as regards tissues is difficult to envisage for the European market as a whole. In some countries (e.g. Italy) British goods appeared in 1924-6 to form a larger proportion of the diminished aggregate trade than they did before the war. In Belgium, on the other hand, the opposite was the case. In both Belgium and Italy, French goods were relatively more prominent among imports than before the war, while German goods were less prominent. Taking Germany, France, Belgium and Italy together, it appears that the aggregate weight of imports of tissues was in 1924 23 per cent., in 1925 44 per cent., and in 1926 60 per cent. below the level of 1909-13. The British export statistics suggest that exports of woollen and worsted tissues to these countries from the United Kingdom in 1924 and 1925 reached barely half the pre-war quantity and fell in 1926 to barely one-third of the pre-war quantity. It appears doubtful therefore whether British tissues have fully maintained their relative position in the European market.

British Dominions.

In the import trade of the self-governing Dominions, British woollen and worsted goods are particularly prominent compared with those of other countries, and the relative importance of British goods in the aggregate trade in wool textiles (however the volume of the trade may have changed) has broadly been maintained at the pre-war level. In some branches British predominance appears to be greater than before, but in others it is less. In the case of Canada the comparative figures for 1913-14, 1924-25, 1925-26 and 1926-27, which are given on pp. 261-2, point to a decline in total imports of yarns and of tissues, except those of blankets, which increased. Almost all imported yarns and a larger proportion of blankets came from the United Kingdom, but (owing to an increase in French imports, particularly dress goods, worsteds and serges), the value of woollen and worsted tissues imported from the United Kingdom fell from 89 per cent. of the total in 1913-14 to 83 per cent. in 1924-25, 84 per cent. in 1925-26 and 81 per cent. in 1926-27. In the Canadian carpet trade, too, the United Kingdom appears to have lost some ground.

Particulars of imports of wool textile goods into the Union of South Africa in 1909-13 (average), 1924, 1925 and 1926, are given on page 265. The imports of cloth and piece goods increased greatly in value, and here the United Kingdom has fully held its own and has no serious rival. The rapid increase of imports from Belgium, France, the Netherlands, Italy and Czechoslovakia should, however, be noticed as indicating potential competition in years to come.

In the case of blankets and woollen shawls the figures suggest a decline in the total quantities imported. In the blanket trade the share of the United Kingdom declined from 92 per cent. to 84, 82 and 79 per cent. respectively in 1924, 1925 and 1926. Belgium,

France, Germany and Italy all improved their relative position. This is not wholly a post-war development, as the share of the countries in the trade was increasing between 1909 and 1913. Imports from Italy in particular rose continuously from £1,713 in 1909 to £15,574 in 1913, and imports from Germany rose from £8,812 to £14,372 over the same period. In the shawl trade Italy has begun to figure apparently as a serious competitor. On the other hand Germany has lost ground.

In the Australian trade the United Kingdom has improved its relative position. The proportion of imports from the United Kingdom rose between 1909-13 and 1925-26 from 94 per cent. to 98 per cent. in the case of yarns; from 85 per cent. to 91 per cent. in the case of piece goods, and from 72 per cent. to 90 per cent. in the case of flannels. (See pp. 262-4.)

In the New Zealand trade also there is practically no competition with British goods from other overseas producers. It should be added that in the case of Canada, Australia and New Zealand British traders are assisted in competition with foreign countries by preferential tariff rates. (See p. 264.)

India.

The position in the trade with India differs substantially from that in the trade with the above-mentioned Dominions. Comparative figures for the five years ending March, 1914, and the three years ending March, 1927, are given on p. 266. A considerable import trade in yarns existed before the war, mainly from Germany and secondarily from the United Kingdom. In 1926-27, the bulk of the imports came from the United Kingdom with Germany well below. In the piece goods trade on the other hand, where the total imports have fallen heavily (though they are apparently recovering), the United Kingdom has seriously lost ground. Her share has declined from two-thirds to between one-half and one-third of the imports, and this despite a great falling off in imports from Germany, which before the war was the second largest supplier of piece goods to India. Belgium, France, Italy and Japan have all cut heavily into the Indian trade. It may be observed, however, that competition from some of these countries was markedly increasing before the war, and that the comparative position of British trade would appear rather more favourable were the experience of the year 1913-14 taken as the pre-war basis instead of that of the five years 1909-10 to 1913-14. For example, imports from France in 1913-14 amounted to 2,234,000 yards, a figure not reached again till 1926-27. On the other hand post-war imports from Belgium and Italy greatly exceed the figures reached pre-war. Czechoslovakia, up to 1926-27, had not regained any substantial part of the pre-war trade with Austria-Hungary. Imports from Japan rose from practically nothing before the war to 2,061,000 yards in 1925-26, but fell again to 1,230,000 in 1926-27.

yards in 1926-27. The goods imported into India from the United Kingdom are predominantly "mixed" woollen and worsted tissues, and, according to the evidence of the West Riding Chambers of Commerce, British goods have been beaten on the score of price. Imports of carpets and rugs from the United Kingdom, which consist on the whole of more expensive kinds, were in 1926-27 still much reduced from the pre-war level, while imports from Italy had greatly increased. In "other sorts" of manufactures (mainly blankets), the United Kingdom has lost ground to Germany and Italy.

Three other countries which import wool textiles preponderatingly from the United Kingdom are the United States, Japan and Argentina.

United States.

The aggregate importation of tops, yarns and woven fabrics into the United States has during the last few years been considerably below the pre-war level, as a consequence no doubt of the high tariff and the growth of the industry in America. Some 77 per cent. by weight of the yarns imported in 1926 came from the United Kingdom. A corresponding pre-war percentage cannot be given. In the case of woven fabrics imports from the United Kingdom in 1924 and 1925 were greater than on the average of the five years preceding the war, notwithstanding a decline in total imports. In 1926 imports from the United Kingdom were the same as before the war, but total imports were again less. The percentage increased from about 58 per cent. before the war to about 79 per cent. in 1924, falling to 76 per cent in 1925 and 77 per cent. in 1926. Imports of carpets from the United Kingdom have more than doubled since before the war, but total imports have trebled, so that there is a slight relative decline. It is possible that this is to be attributed, in part at any rate, to carpets being imported to a greater extent directly from such countries as India and China instead of indirectly from the United Kingdom. (See pp. 259-60.)

Japan.

In the Japanese trade, the United Kingdom predominates as a supplier of tops and tissues, but not of yarns, which are supplied more largely by Germany. The United Kingdom, however, supplies a substantially larger proportion of the yarns than was the case before the war (23 per cent. in 1926 compared with 12 per cent. before the war). In the top trade British goods encounter competition from Australia; but the proportion of British tops in the total imports is not substantially less than before the war. The aggregate import of tissues into Japan has increased in quantity since the war, while on the basis of value imports from the United Kingdom have risen from 66 per cent. of the total before the war to 89 per cent. (See p. 268.)

Argentina.

Finally may be noted the position in Argentina—one of the most important South American markets for wool textiles. As a supplier of yarns the United Kingdom plays an insignificant part, being eclipsed by Italy, Belgium, France and Germany. On the other hand, the United Kingdom supplies the greater part of the woollen and worsted cloths. The proportion so supplied has somewhat fallen, having been 64 per cent. in 1909–13, 58 per cent. in 1924, 56 per cent. in 1925 and 53 per cent. in 1926. The proportion of German trade has fallen more heavily (from 17 per cent. to 5 per cent.) while imports from France, Italy, Belgium and Spain all show a marked progress. These percentages are based on weights, and the results might require qualification if values were taken into account. The wool textile products sent from this country to Argentina are largely of the finest and most expensive kind. In the trade in pile tissues (including pile carpets), the United Kingdom has fully maintained its predominant position, though the total trade has declined. (*See* p. 269.)

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APPENDIX 1.

THE RAW WOOL SUPPLY.

Production and Consumption.

As has already been indicated, the wool textile industry in this country depends to a large extent on imported wool, and considerable discussion has taken place during the post-war years as to the adequacy of future supplies of wool for the world's requirements in general, and for the needs of this country in particular. From the point of view of British requirements, the world's wool clip is a somewhat theoretical conception. For one thing, British traders and producers are little concerned except with what may be called the commercial clip, i.e., that part of the clip which is or may be dealt in on the big wool markets of the world. For another thing, quality is an important consideration for practical purposes. The three main classes of wool are merino, which represents broadly the finest qualities used primarily in the worsted branch of the industry; crossbred, used for general manufacturing purposes;* and "low" wool, used in the manufacture of carpets, blankets and rugs; and within each of these three classes there is a wide variety. The United Kingdom consumes relatively less quantities of merino wool than continental countries, which specialise in making up the lower grades of merino.† On the other hand, she is by far the largest individual consumer of crossbred wool.

The Board of Trade Departmental Committee on the Textile Trades estimated that in 1915 the total production of wool and the proportion of each class produced by the British Empire were as follows:—

<i>Class.</i>	<i>Estimated Total Quantity.</i>	<i>Estimated Proportion Produced by British Empire.</i>
	<i>Million lbs.</i>	<i>Per cent.</i>
Merino	1,074	63
Crossbred	1,022	40
Low wool	700	9

Outside the British Empire, South America was the main source of cross bred wool, producing about 32 per cent. of the total. The low wool came mainly from foreign countries (Russia, 40 per cent., and other foreign countries, mainly China and Persia, 50 per cent.).

Considering the total amounts of the different classes which were *exported* (as distinguished from the amounts produced), the percentages exported from countries of the British Empire were greater than those shown in the above table; and, according to estimates relating to the year 1913, the proportions of the total exports which were taken by the United Kingdom were between 20 and

* The finest crossbred wools are only slightly inferior to merinos, so that there are considerable possibilities of substitution in the using industries.

† In 1925, the first year for which particulars are available, only about 21 per cent. of the wool (sheep's and lambs') retained in the United Kingdom was merino, the remainder being cross-bred and carpet wool. As between 1925-26 and 1913-14, there is said to have been a trend from crossbred wools to merinos.

30 per cent. for merino, and between 30 and 40 per cent. for crossbred. Hence as the quantities taken by other countries of the British Empire were trifling, the British Empire supplies fully covered British Empire requirements of crossbred wool, and were far in excess of the British Empire requirements of merino. There is nothing to suggest that the position in this respect has been substantially altered since the war; and the situation as regards raw material in the wool textile industry therefore differs fundamentally from that in the cotton industry, where the British industry is of necessity largely dependent on supplies from the United States. In fact, however, the United Kingdom draws its supplies of wool from non-Empire as well as Empire sources, and in any case wool is an international commodity open to the competition of all countries. Hence the British wool textile industry is closely affected by the world conditions affecting the demand for and supply of wool, and is vitally concerned in the question whether supplies are likely to prove adequate.

This question is one to which it is very difficult to return a conclusive answer. The trade is, unfortunately, ill-equipped with accurate statistics of wool production, while statistics of mill consumption and stocks in consumers' hands are almost non-existent. Statistics of wool production are based largely on ascertained or estimated numbers of sheep in different countries, and in some cases they are essentially conjectural. Table A, p. 236, contains estimates of the world's wool clip, comparing the average for the period 1909-13 with each of the five years 1922 to 1926. These estimates agree in pointing to a marked expansion of the world's wool supply from the low level to which it had fallen during and for some time after the war. They do not, however, agree as to whether the world's wool supply has reached the pre-war level.

As the bulk of the world's wool clip is consumed in countries other than those in which the wool is grown, estimates of the clip may usefully be supplemented by figures showing the exports of wool from the principal wool-exporting countries. Particulars as to this are contained in Table B, p. 237, which gives the estimated equivalents, in terms of greasy wool, of the various classes of wool recorded as having been exported from the countries in question. The total exports of wool from the countries for which approximately comparable pre-war and post-war figures are available amounted to about 1,769 million lb. of greasy wool on the average of the years 1909-13. The corresponding figure for 1923 was 1,827 million lb., for 1924 1,602 million lb., for 1925 1,586 million lb., and for 1926 1,960 million lb. The last figure is nearly 11 per cent. above the corresponding figure for the average of 1909-13.

Clearly the adequacy of the world production of wool depends on the world's requirements for the material, but unfortunately the compilation of accurate and comparable statistics of wool consumption is impossible. Whether or not the world's wool clip has increased to its pre-war dimensions, it seems fairly certain that the tendency will be for the world demand for wool to increase, and unless this demand is to be checked by high prices it is necessary that world production should be correspondingly augmented.

Unfortunately the increase of production in many countries is confronted by great difficulties, and it is significant that for a number of years before the war, when the world production of many other descriptions of produce was rapidly increasing, the world's wool clip showed no expansion. Among the factors adverse to an increase in wool production are the tendency for encroachment of arable on pastoral land (as in Australia and South America), of cattle raising on sheep farming (as in the Argentine), of sheep farming for meat on that for wool* (as in New Zealand), and the gradual transfer of

* This tendency particularly affects the supply of merino wool, as crossbred sheep are much superior to merinos as mutton.

activity in many countries from rural to industrial pursuits. On the other hand, there are still large vacant areas in many countries available for the extension of sheep farming, and efforts are already being made in some cases to develop them. Moreover, supplies of wool can be (and have been) increased by introducing better breeds of sheep bearing heavier fleeces. On the whole, the expansion of wool supplies during the next few years seems likely to be largely dependent on the price of wool (conjoined with the price of mutton) in relation to the price of other agricultural produce, notably wheat and other cereals; but the situation is too complicated and the available information not sufficient to enable the course of events to be forecasted with any certainty.

Prices.

Considerations of price also affect the demand for wool and wool textile products, and here the comparison is with the general price level and the price of competing articles. The following table has been prepared to indicate wool prices during post-war years in relation to the course of wholesale prices generally and wholesale prices of the whole group of textiles. In view of the difficulty of obtaining quotations for a standard quality of wool, and also of the uncertain relation between the greasy weight and the scoured yield of greasy wool, the course of wool prices is represented in the table below by the average prices quoted in the "Weekly Wool Chart" for four counts of tops, namely 64's merino, 56's crossbred (carded), 50's crossbred (carded) and 40's (prepared).

The wholesale prices are those shown by the Board of Trade Index Number.

(Average for 1913=100 per cent.)

Year.	Index Numbers of Wholesale Prices.		Average prices of tops as per- centages of prices in 1913.			
	All Articles.	Textiles.	64's Merino.	56's Cross- bred (Carded).	50's Cross- bred (Carded).	40's (pre- pared).
1913	100	100	100.0	100.0	100.0
1920	307.3	417.1	372.6	328.3	277.1
1921	197.2	182.0	149.6	117.4	104.8
1922	158.8	173.9	193.2	135.9	108.4
1923	158.9	186.3	210.3	160.9	130.1
1924	166.2	211.7	251.3	213.0	180.7
1925	159.1	198.1	192.3	163.0	144.6
1926	148.1	159.2	166.7	138.5	122.7
1927	141.4	155.6	165.1	152.6	131.6

The post-war period since 1920 has seen great fluctuations in prices. In all qualities the average for 1921 was less than half the average for 1920. Between 1921 and 1924 a sharp rise occurred, followed in 1925 and 1926 by a heavy fall. In 1927 there was on the whole a rise as compared with 1926. The rapid absorption by the trade of the supplies of raw wool accumulated during the war period gave rise to the belief that the rate of consumption

had greatly outstripped the rate of production, and in fact consumption was undoubtedly stimulated by relatively low prices. But it appeared later that the war stocks had not passed into consumption as quickly as they had been absorbed by the trade; to an important extent they had been employed in building up stocks. The fall of prices from the high point reached in 1924 was due largely to the realisation of this fact, as well as to the check which high prices administered to the demand for manufactured goods. A lesson to be learnt from the experiences of these years is the need for adequate statistics not only of wool production but also of wool consumption and stocks.

Distribution and Marketing.

London and Great Britain as a world market for wool.

London has long been the world's principal market for raw wool, especially for the better grades. Wool from Australia, New Zealand and other countries is sold at periodical auction sales, attended by buyers from many parts of the world. Similarly, in low-grade wools (e.g. East Indian), regular auction sales are held in Liverpool.

For many years, however, the outstanding importance of the London auction sales has been declining, and the decline has been accentuated since the war. The decline in London has been associated with an increase in direct shipments of wool from producing countries (a) into British ports such as Hull and Liverpool, which are near to the consuming centres; and (b) to other consuming countries. Table C, page 238, contains statistics as to imports of wool into various British ports between 1895 and 1926, and shows clearly how the share taken by the ports other than London has increased. The increase in direct shipments from producing to consuming countries (particularly the United States, Japan, and Italy) is illustrated by Table D, pp. 239-40, relating respectively to shipments from Australia and New Zealand, South Africa, Argentina, and Uruguay. Another aspect of the changes just described is the increase in the importance of local wool markets in producing countries. Both in Australia and in New Zealand local markets had become firmly established during the decades immediately preceding the war, and their importance has increased still further since the war. This can be seen by considering the proportion of wool exported from Australia and New Zealand after sale locally. In the case of Australia the proportion increased from about half in the middle 90's to about four-fifths on the average of the five years immediately preceding the war, while in the four years ended June, 1927, all but a trifling percentage of the wool exported had been sold locally. For New Zealand the figures are lower, being less than half during the five years immediately preceding the war and about four-fifths on the average of the four post-war years. Much of the wool sold locally in Australia and New Zealand is exported to the United Kingdom and some of it re-sold in London; but the proportion of the total exports of wool from Australia and New Zealand to the United Kingdom which is sold before export has risen substantially since the war, and this increase is no doubt connected with the increase in direct shipments to the manufacturers in this country mentioned already.

The reasons for the tendencies described above are not far to seek. It is obvious that sale locally in the country of production means quicker payment for the grower than consignment to London, and cable communications now ensure that prices in the producing country move in close correspondence with those in London. From the manufacturers' point of view, direct shipment may seem to promise economy in freight, handling, etc.; and the improvement of shipping facilities between producing and consuming countries has assisted direct buying for the user. Nevertheless, transport facilities to this country, and to London in particular, are still much better than, for example,

to the Continent ;* and in spite of the developments described above, London offers, and will doubtless continue to offer, substantial advantages as a marketing centre for wool. Proximity to the largest international wool market must be counted as an important advantage which the British wool textile industry enjoys, not perhaps over its nearest continental competitors (who are in some cases no further distant from London than Bradford is), but certainly over those who are more remote.

Not only does this country import 80 per cent. of the wool exported from New Zealand, 40 per cent. of that from Australia, over 40 per cent. of that from South Africa, and an increasing quantity of wool from the Argentine, but it takes almost all the exports of wool from British India. These represent nearly half the total exports of wool from a group of countries (India, China, Algeria and Persia) which together provide the great bulk of the supplies of carpet wools for other countries. The next largest exporter in the group is China, whose exports go predominantly to the United States.

Notwithstanding the increase in direct shipments of wool from producing to consuming countries, as mentioned above, the British re-export trade in imported wool remains of very great importance and has been fully as large in the past few years as it was immediately before the war. (See Table 5, p. 275).

There is also an important export trade in home-produced wool, for it is a remarkable fact that, while the British wool textile industry requires a great deal more wool than is grown in this country, a large part of the native clip is exported.† The reason lies in the special characteristics of the wool, which are said to make it particularly suitable for the manufacture of all kinds of lustrous garments and hosiery, although unsuitable for the type of fabric made in this country. The clip has been smaller since than before the war, but a larger proportion of it has been exported. (See Table 5, p. 275.)

Marketing Arrangements.

Wool is much more variable, and much less capable of precise grading than cotton. Even if a guaranteed system of grading by length or diameter of staple could be devised, the difficulty would still remain that there are other qualities which make wools differ considerably in processing properties. In the absence of exact classification, purchase by description is impracticable, and actual inspection of wool before purchase is necessary as a general rule. The complexity of the arrangements necessary to enable wool to be inspected by buyers and the purchase to be effected is illustrated by the following statement of the procedure connected with the London auction sales. The statement is taken (with slight abbreviation) from a memorandum submitted by the National Association of Unions in the Textile Trade.

* The fact that Great Britain is such a large consumer of frozen meat means that there is frequent and regular service of liners with refrigerated space, and as these require other cargo in their non-refrigerated space it is convenient for them to load up with wool. In this connection it may be noted that, although Great Britain never played a very prominent part in the South American wool trade, the quantities of Argentine wool shipped to the United Kingdom since the war have been larger than before the war.

† In 1926, 24,454,000 lb. of greasy wool and 16,432,000 lb. of scoured or washed wool, all British, were exported out of a total clip estimated at 114,600,000 lb., and in addition 4,820,000 lb. of pulled or slipped wool, all British. Exports included also 8,089,000 lb. of imported wool scoured or washed in the United Kingdom and 600,000 lb. of imported wool pulled, slipped, etc., in the United Kingdom.

"Wool is brought by liners from the Dominions to certain of the docks in the Thames. . . . In the docks the wool is dumped on the quay in the transit sheds to await transport to the London dock, or it is put overside direct into a barge and the craft is either tugged or floated up the river on the tide, and then taken into the London dock. There the wool is placed in the transit sheds and duly transported by lorry or by truck to the wool warehouse. The bales are now weighed, sampled and piled, and they remain in the warehouse until sale time. When required for sale the bales are broken down from pile, lifted to the top floor and lotted. They are cut open at one corner, a little wool is pulled out and exhibited to the buyers from the West Riding, France, Germany, America, etc. One bale often contains more than one class of wool or wool of different staples, and the buyers ascertain the quality and length of staple. The wool remains on view until 2 o'clock on the day of sale, and the buyers then proceed to the Wool Exchange at Coleman Street, where they bid at a public auction. After sale, the bales are then re-packed, sown up again, broken down, re-weighed, brought to a lower floor and re-piled to await delivery. They are again broken down, put on lorries and taken across London to the railway station to be transported to the West Riding, etc."

Some headway has recently been made towards greater uniformity in grading wool. Three, until quite recently unrelated, series of numbers or names—the British, the United States and the South American—were used in different countries to distinguish grades of clothing wool. The British system applies to all wools purchased in the British Empire. Wools are graded by numbers ranging from 36 for the coarsest fibre to 80 for the finest. Although these numbers may have been connected originally with the size of the yarn to which the wool of each grade could be spun by the worsted process, the number of hanks of 560 yards in one pound weight being the "count" of the yarn, any value which the system may have had as indicating spinning quality has been lost, and the numbers are now arbitrary designations of certain grades of wool. The United States and the South American classifications, in which grades are designated partly by names and partly by numbers, are also arbitrary, with a narrower range corresponding with the smaller diversity of the wools produced in those countries.

In the autumn of 1925 a committee representing the Department of Agriculture and Commerce and the wool manufacturing industry of the United States visited England to ascertain whether typical sets of wool and tops prepared by the committee indicated correctly, as to diameter of fibre only, the average Bradford grades. The correlation proposed by the Americans was approved by the British Wool Federation, as well as by the spinning, manufacturing and export sections of the industry and by the Bradford Chamber of Commerce. One set of wool standards representing qualities of wool from 36's to 80's is in the custody of the Bradford Chamber of Commerce and the other is deposited with the United States Department of Agriculture.

While such systems of classification are no doubt of advantage, there is in existence, so far as Bradford at any rate is concerned, no market committee to guarantee grades, although the leading trade associations provide facilities for arbitration in commercial disputes; and inspection of wool before purchase remains general.

Just as there is no satisfactory guaranteed system of grading wool, as there is of cotton, so there is no highly organised market in wool, tops or yarns like that which exists in the cotton trade for raw cotton. Forward transactions of a kind are, however, by no means unknown, and they make it possible to shift risks to a certain extent as between the different sections of the trade. This applies particularly to tops, owing to the existence of certain recognised types and to the guarantee of quality implied by the names of several well-known firms. There is, however, no regular market; and for the most part the

contracts are met by actual delivery, and differ in this respect from a "futures" contract in the cotton market. The possibility of establishing in this country a regular "futures" market in tops, which would enable spinners and manufacturers to avoid commercial risks by transferring them to an organised market, has engaged attention to some extent in the industry.

On the Continent organised speculative markets in wool and tops existed for many years before the war. Speculative buying and selling of raw wool was introduced at Havre in 1887. The example was soon followed by Antwerp, by Roubaix and Tourcoing and by Rheims, all of which established speculative markets in raw wool and tops, though dealings in tops in fact greatly preponderated over dealings in raw wool. In 1890 a speculative market in tops was set up at Leipzig. The chief reasons for the establishment of these speculative markets in wool and tops, according to a German author,* were (a) the desire of wool merchants and manufacturers to reduce risks by "hedging" transactions, (b) the desire of combers to spread employment more evenly over the year, and (c) the desire of speculators to find new opportunities for gain.

It seems doubtful whether these speculative markets were, on the whole, an advantage to the industry and trade on the Continent. It is stated that the combers complained that speculation tended to relate movements in the price of tops and the price of wool too closely together, and to narrow the margin between them unduly. The spinners objected that excessive quantities of tops were made of a kind suitable for delivery in fulfilment of speculative contracts, and that they could not get the qualities of tops that they wanted. It is also stated that the range of market quotations based on a small variety of continental combed wools was far too narrow to cover the numerous descriptions and qualities of wools actually used.

The Havre and Roubaix-Tourcoing speculative markets in raw wool and tops were reopened after the war, but there was an almost complete absence of business consequent on the unstable condition of the exchanges and on the fact that transactions had to be in terms of French currency. The Antwerp futures market in tops—formerly the most important in Europe—has not been re-established, partly, it is said, on account of opposition from spinners and manufacturers in Belgium and Germany, and partly also because suitable stocks of wool have been insufficient to enable an appropriate standard quality of tops to be made to which dealings could be related.

TABLE A.
Estimates of the World's Wool Clip, 1909-13 and 1922 to 1926.
(In Millions of lbs.)

Year	Estimate of League of Nations Economic & Financial Section	Estimate of United States Department of Agriculture	Estimate of United States Department of Commerce	Estimate of American National Association of Wool Manufacturers
1909-13 average	3,224	3,011	3,231	2,906
1922	2,675	(?)	2,671	2,702
1923	2,723	2,727	2,719	2,721
1924	2,856	2,911	2,806	2,720
1925	2,930	2,998	2,892	2,826
1926	(?)	3,024	3,061	3,022

* Dr. Berthold Halmebach, "Der Terminhandel in Wolle und Kammzug," Leipzig, 1922.

TABLE B.

Exports of Raw Wool (estimated greasy equivalents) from the principal producing countries, 1909-13 and 1923 to 1926.

Countries	Annual Average 1909-13	1923.	1924.	1925.	1926.
	Million lb.	Million lb.	Million lb.	Million lb.	Million lb.
Australia	693	811*	569*	571*	869*
New Zealand	209	251	233	229	240
South Africa	149	173	183	217	218
Falklands	5	5	4	3	4
British India	56	38	51	50	40
Iraq	—	7	27	43	12
Kenya and Uganda	(a)	(a)	1	1	1
Irish Free State	—	—	24	16	18
Argentina	328	304	282	260	328
Uruguay	139	99	104	91	120
Chile	16	23	27	29	25
Peru	5	5	7	6	5
China	37	47	65	57	28
Persia	10	8	12	12	12(d)
Egypt	4	3	4	4	3
Hungary	22	8	11	14	13
Italy	3	2	2	2	3
Portugal	1	1	1	3	3(d)
France	84	46	37	35	45
Belgium (b)	196	58	56	4	4
Netherlands (b)	26	4	2	1	2
Poland	—	1	2	2	1
Germany	8	3	10	3	4
Russia	18	—	1	8	3
Total (c)	1,769	1,827	1,602	1,586	1,960

* Years ending 30th June.

(a) Not available.

(b) The trade statistics for Netherlands and Belgium for 1909-13 do not distinguish greasy from scoured, etc., wool, and include a large amount of wool in transit.

(c) Excluding Iraq, Irish Free State, Kenya and Uganda, Belgium, Netherlands, Poland and Russia.

(d) Figure for 1925 repeated.

Notes.—In the case of European Countries, exports of scoured and washed wool have so far as possible been excluded.

TABLE C.

Imports of raw wool into London, Hull, Liverpool and other ports of the United Kingdom.

	London.			Hull.			Liverpool.			Other Ports.		
	Total Im-ports.	Re-ex-ports.	Retained Im-ports.	Total Im-ports.	Re-ex-ports.	Retained Im-ports.	Total Im-ports.	Re-ex-ports.	Retained Im-ports.	Total Im-ports.	Re-ex-ports.	Retained Im-ports.
	Million lb.			Million lb.			Million lb.			Million lb.		
1895-9 (average)	547.8	230.8	317.0	32.7	7.6	25.1	81.9	37.9	44.0	53.8	60.5	*- 7.2
1900-4 (average)	452.8	166.9	285.9	30.9	6.9	24.0	96.1	30.6	65.5	47.9	57.3	*- 9.4
1905-8 (average)	460.2	194.3	265.9	37.5	7.3	30.2	120.7	35.6	85.1	64.9	58.9	6.0
1909-13 (average)	517.5	205.9	311.5	41.1	7.5	33.6	165.2	50.0	115.2	76.8	71.2	5.7
1920 ..	506.9	112.5	394.4	70.3	6.9	63.4	175.4	39.0	141.4	116.3	62.2	54.1
1921 ..	404.7	181.3	213.4	101.6	9.8	91.8	135.3	31.8	103.4	118.7	101.0	18.7
1922 ..	502.4	290.6	271.8	224.5	32.0	192.5	198.7	71.3	127.4	179.9	119.5	68.4
1923 ..	378.5	214.9	163.6	149.1	29.0	120.1	128.4	64.8	68.5	98.2	104.1	*-15.9
1924 ..	349.4	195.6	153.8	143.6	16.1	127.5	150.0	53.8	96.2	117.3	93.2	24.1
1925 ..	388.7	170.2	218.5	109.6	6.9	102.7	111.6	46.9	64.7	117.0	115.4	1.6
1926 ..	382.8	190.6	192.2	174.3	10.0	164.3	132.6	36.8	95.8	121.7	101.0	20.7
	Per Cent. of U.K. Total.			Per Cent. of U.K. Total.			Per Cent. of U.K. Total.			Per Cent. of U.K. Total.		
1895-9 (average)	76.5	68.5	83.7	4.6	2.3	6.6	11.4	11.2	11.6	7.5	18.0	*- 1.9
1900-4 (average)	71.2	63.8	78.9	5.1	2.6	6.9	15.9	11.7	18.9	7.8	21.9	*- 2.7
1905-8 (average)	67.3	65.6	68.7	5.5	2.5	7.8	17.7	12.0	22.0	9.5	19.9	1.5
1909-13 (average)	64.7	61.5	65.8	5.1	2.3	7.2	20.6	14.9	24.7	9.6	21.3	1.3
1920 ..	58.1	51.2	60.4	8.0	3.1	9.7	20.6	17.3	21.6	13.3	28.3	8.3
1921 ..	53.2	57.3	49.6	13.3	2.9	21.5	17.8	9.7	24.2	15.7	30.2	4.4
1922 ..	45.4	51.5	41.3	20.3	7.2	39.2	18.0	15.9	19.4	18.3	25.4	10.1
1923 ..	51.2	52.1	50.1	20.2	7.0	39.8	16.7	15.7	17.9	11.9	25.2	*- 4.8
1924 ..	48.0	54.5	38.3	18.9	4.5	31.7	19.7	15.0	24.0	15.4	26.0	6.0
1925 ..	53.5	50.1	55.4	15.1	3.1	29.5	15.3	13.8	16.7	16.1	34.0	0.4
1926 ..	47.2	56.3	40.6	21.5	3.0	34.7	16.3	10.9	20.3	15.0	29.8	4.4

* Re-exports in excess of gross imports in these years.

The percentage figures clearly show that a much smaller proportion of the total imports of sheep's and lambs' wool enters through the port of London than was the case twenty or thirty years ago, while the decline in the proportion of retained imports which enter through the port of London is even heavier. London has retained its position relatively better in the re-export trade, but even in that branch she has lost ground to Liverpool and other ports. In this connection it may be observed that part of the wool imported into the three principal ports may be re-exported through other ports. Dover and Harwich figure as considerable exporters of foreign and colonial wool though their imports are small; and it may be conjectured that the wool re-exported is obtained from London. Similarly it seems probable that the substantial re-export from Manchester consists of wool imported into Liverpool.

TABLE D.

Exports of raw wool from certain producing countries to principal manufacturing countries.

NOTE.—Throughout these tables exports are reckoned in terms of greasy wool and stated in thousands of lb. Scoured, washed and slipped wool have been converted into greasy wool on the assumptions that one pound of scoured wool is equivalent to 2 lb. of greasy wool, that 2 lb. of washed wool are equivalent to 3 lb. of greasy wool, and that 3 lb. of slipped wool are equivalent to 4 lb. of greasy wool.

From Australia.

	1909-13. Average.	1923-24.	1924-25.	1925-26
To—				
United Kingdom ..	275,528	212,294	229,507	321,030
France	182,163	137,973	125,843	242,958
Italy	4,833	26,124	29,580	34,790
Belgium	70,079	54,738	41,961	71,194
Germany	130,698	36,326	43,555	69,353
United States ..	15,619	32,768	39,929	63,494
Japan	7,395	47,558	53,939	60,957
Other Countries ..	6,534	20,898	7,020	5,319
Total	692,849	568,679	571,334	889,095

From New Zealand.

	1909-13 Average.	1924.	1925.	1926.
To—				
United Kingdom..	196,173	179,413	184,810	194,358
France	2,190	7,390	7,036	12,430
Italy	—	4,583	2,093	1,330
Belgium	483	813	276	635
Germany	4,238	15,893	15,990	4,390
United States ..	3,897	7,080	11,878	15,783
Japan	18	3,777	2,536	2,719
Other Countries ..	1,725	13,945	4,357	8,275
Total	208,724	232,894	228,976	239,920

TABLE D.—*continued*
From the Union of South Africa.

	1909-13. Average.	1924.	1925.	1926.
To—				
United Kingdom ..	80,733	94,143	93,837	102,015
France	3,315	21,962	38,089	42,731
Italy	801	5,476	9,624	7,026
Netherlands ..	256	9,011	3,305	4,478
Belgium	13,429	18,252	18,992	19,219
Germany	50,444	28,053	35,713	31,776
United States ..	80	4,902	15,373	8,820
Japan	—	300	240	174
Other Countries ..	22	1,050	1,391	1,498
Total	149,080	183,149	216,564	217,737

From Argentina.

	1909-13. Average.	1924.	1925.	1926.
To—				
United Kingdom ..	42,749	58,756	45,610	66,936
France	118,897	55,716	72,543	76,562
Italy	5,436	13,793	15,940	27,456
Netherlands ..	2,581	5,137	3,808	3,022
Belgium	33,673	22,072	19,402	23,639
Germany	91,084	79,434	61,263	78,332
United States ..	27,692	38,424	36,246	39,402
Japan	—	82	802	1,482
Other Countries ..	6,002	8,218	4,474	10,841
Total	328,114	281,632	260,088	327,672

From Uruguay.

	1909-13. Average.	1924.	1925.	1926.
To—				
United Kingdom ..	10,570	13,168	5,811	
France	40,761	15,768	13,508	
Italy	5,616	6,291	7,971	Not
Netherlands ..	—	11,085	2,248	available
Belgium	24,104	8,532	4,974	
Germany	33,502	33,693	25,335	
United States ..	4,110	9,452	30,137	
Other Countries ..	20,482	5,108	1,338	
Total	139,145	103,097	91,322	120,166

It will be seen from the tables that, since the war, there has been a marked increase in direct shipments of wool from Australia and New Zealand to the United States, Japan and Italy.

In the South African Wool trade, consignment by growers for sale in London was never as prominent a feature as in the Australian trade, and the small growers—especially the native flock masters—sold their wool locally, in many cases to storekeepers, who in turn sold it to buyers for European firms or to export houses at the ports. Before the war more than half the wool came to the United Kingdom and part was sold by auction, though the greater part privately. Since the war, an outstanding feature has been the entry of the United States and Japan as direct buyers in South Africa. Direct shipments to France, Italy and the Netherlands have also greatly increased.

In the South American Wool trade, Great Britain never played so prominent a part as in the Australasian or South African trades. South American wools were always used much more largely on the Continent than in this country. This was bound up with the fact that South American wools are apt to be affected by burrs and other vegetable impurities which require to be extracted by a special carbonising process. Most of the plant for the purpose was situated on the Continent, but during the war additional carbonising plant was erected in this country, and the British industry is consequently in a somewhat better position to use South American wool than was formerly the case. The bulk of South American wool is bought in South America by buyers on commission, or by representatives of European firms, and shipped direct to consumers. Only a small part is consigned unsold to the auctions at Antwerp, Liverpool or London. Since the war somewhat larger quantities of Argentine wool have been shipped to the United Kingdom. As in the cases of Australia, New Zealand and South Africa, there has also been a growth of direct shipments to the United States, Italy, and Japan.

APPENDIX 2.

NOTES ON THE WOOL TEXTILE INDUSTRY IN OTHER COUNTRIES.*

This Appendix relates primarily to the growth of the wool textile industry in countries other than the United Kingdom, including the effect of that growth on the imports and exports of wool textile products into and from those countries. In addition it includes particulars of the imports of wool textile manufactures into certain important markets discussed in Section IV of the Chapter.

The European countries dealt with are :—

France	..	..	..	..	Page 243
Belgium	..	..	..	..	246
Germany	..	..	..	..	247
Italy	..	..	..	..	251
Czechoslovakia	..	..	..	..	253
Poland	..	..	..	..	255

The first five of these countries not only manufacture wool textiles in great quantities, but also export on a large scale. They are, moreover, large consumers of British wool products, especially tops and yarns. Their exports of wool textiles constitute all but a very small proportion of the international competition which British exports have to meet in the markets of the world. The wool textile industry of Poland has not the same importance as that of the other five countries from the competitive point of view in international trade, but it is of potential importance in this connection owing to the possibility of its products being diverted to new outlets if the Russian demand should not revive.

Apart from the competition of the first five European countries mentioned above, the competition met with by British exports arises mainly from the domestic production of countries into which those goods are imported. The textile industry of the

United States of America .. Page 256

is interesting for its rapid development until now it is second only to that of the United Kingdom. The country is also an important market for British wool textile products.

Of the British Dominions dealt with in the review, namely—

Canada	..	..	..	..	Page 260
Australia	..	..	..	..	262
New Zealand	..	..	..	..	264
South Africa	..	..	..	..	264
India	..	..	..	..	265

the first three are making efforts to establish a wool textile industry. A beginning has also been made in India, but the industry is very small in relation to the vast population of the country. In South Africa the wool textile industry is so far undeveloped.

In the case of

Japan Page 267

the wool textile industry is of substantial and growing importance, but the country also imports large quantities of wool textile goods.

Argentina Page 269

is important primarily as a market for imported goods.

* See also pp. 172-5, 217-8, and 221-8.

France.

France has an old-established wool textile industry, which appears to have been increasing before the war. Judging by the consumption of wool between 1862 and 1908, the industry about doubled in size, and it now ranks with the wool textile industry of Germany next after those of the United Kingdom and the United States. Its exports, however, did not keep pace with its growth, for the statistics show that, taking a five-yearly average from 1880-84 to 1909-13, the value of the woollen manufactures exported from France steadily declined from £14.7 million to £8.2 million.

The preponderance of the worsted branch of the industry is shown by the fact that before the war France had 2,365,600 worsted as against 712,400 woollen spindles. The worsted industry is sectionalised as in Yorkshire, but it exhibits important technical differences from the Yorkshire worsted industry which result in corresponding differences in the nature of the finished product. This matter has already been discussed in connection with the question of French competition in the United Kingdom market (p. 201).

The number of persons engaged in the French wool textile industry before the war was about 165,000 (97,000 men and 68,000 women), and it is believed that since the war the total number has been somewhat less.

As nearly all the combing mills and four-fifths of the spinning and weaving plant were situated in areas occupied by the enemy, or within the range of fire during the war, a vast effort was required to restore or replace buildings and plant. As a result of this effort, together with the restoration to France of Alsace (an important centre especially of worsted production), and the war-time development of new or already existing wool-working centres in other parts of France, the productive capacity of the French industry is now probably greater than before the war.* While, in the course of re-building the northern factories, a good deal of new machinery has been installed, a deputation from the National Association of Unions in the Textile Trades, which visited Roubaix and Tourcoing (the principal centre of the industry) in October, 1925, formed the impression that in that area, reconstruction has not meant so much new plant as repaired plant. The deputation came to the conclusion generally that the standard of efficiency of the equipment is, "to say the least, no higher than that obtaining in England." The Wool Textile Delegation stated in evidence that by means of their new post-war machinery, French manufacturers are making a quality of material which they never exported much before the war.

In comparing pre-war and post-war statistics of French trade, account must be taken of the fact that France now includes Alsace-Lorraine. In addition to affecting productive capacity, this also involves, for example, that goods sent from France to Alsace no longer count as exports; but the incorporation of Alsace with France is understood to have had the effect on the whole of swelling the figures of French exports in the post-war years. The effects of a depreciating currency in discouraging imports and stimulating exports must also be borne in mind. The Tariff on woollen and worsted goods in 1926 when calculated *ad valorem* was lower than in 1914.

France imports most of her raw wool. An important feature of the French industry is the de-woolling of sheepskins which is carried on on a very large scale at Mazamet. Pulled wool from Mazamet is an important raw material, not only for the French wool textile industry, but also for the industry of other European countries, including Great Britain.

* In 1922, when reconstruction was still incomplete, the machinery comprised 1,757 combing machines, 2,292,400 worsted spindles, 679,100 woollen spindles, and 55,400 looms.

The quantity of tops, yarns and manufactured goods imported in 1909-13 (average), 1924, 1925 and 1926 was as follows :—

	(In metric tons.) 1909-13 (average).	1924.	1925.	1926.
<i>Tops</i> (including carded wool)	291	916	762	736
<i>Yarns</i>	1,910	1,291	1,013	891
Worsted	1,010	432	269	230
Woollen	209	329	378	336
Alpaca, mohair, etc. ..	691	530	366	325
<i>Manufactures</i>	3,943	361	962	716
Cloths, cashmeres, etc. ..	3,003	648	732	567
Stuffs of pure wool ..	264	5	8	12
Stuffs, mixed	219	138	151	97
Alpaca and mohair tissues	435	40	36	19
Blankets	8	15	22	8
Other tissues	14	5	13	13
<i>Carpets.</i>	sq. m.	sq. m.	sq. m.	sq. m.
(a) Knotted or twisted pile (including imitations) ..	146,077	129,761	113,254	130,402
(b) Other sorts ..	m. tons. 129	m. tons. 25	m. tons. 30	m. tons. 22

Imports of tops and yarns (except of alpaca, mohair, etc.) are small relative to exports, and imports of worsted yarns were much lower in 1924, 1925 and 1926 than in 1909-13. As regards manufactures, exports greatly exceeded imports before the war, and the excess of exports was considerably greater in 1924 to 1926. In the case of alpaca and mohair tissues, imports exceeded exports before the war, but there the position has been reversed, imports having shrunk to a small figure, while exports have considerably increased. The pre-war imports of cloths, cashmeres, etc., were substantial, and amounted to about two-thirds of the quantity exported. Imports have fallen heavily while exports, after rising in 1924 considerably above the pre-war level, fell in 1925 and 1926 substantially below that level. Exports of stuffs of pure wool—always an important trade—exceeded the pre-war level of quantity by over 50 per cent. in 1924, 1925 and 1926. In 1924 to 1926, as in 1909-13, imports of knotted or twisted pile carpets greatly exceeded exports, but exports of "other sorts" of carpets, which exceeded imports before the war, greatly increased, while imports diminished in 1924 to 1926.

The following table gives particulars as to the total quantities of the principal kinds of goods exported, and the quantities sent to the principal destinations in 1909-13 and in 1924, 1925 and 1926.

Destination.	Average 1909-13.	1924.	1925.	1926.
(a) Wool Tops (including Carded Wool).				
	Metric Tons.	Metric Tons	Metric Tons.	Metric Tons.
Belgium* ..	14,891	9,444	6,812	9,447
Germany ..	6,345	2,706	3,927	8,627
Italy ..	3,066	963	1,080	877
Switzerland ..	333	1,594	541	842
Spain ..	744	169	263	} 5,642
Other countries ..	1,038	3,642	3,291	
Total ..	26,417	18,518	15,914	25,435

* Belgo-Luxemburg Economic Union in 1924, 1925 and 1926.

Destinations.	Average, 1909-13.	1924.	1925.	1926.
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(b) Worsted Yarn.

	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Belgium§ ..	2,496	4,863	3,389	3,727
United Kingdom ..	5,045	2,471	2,149	3,167
Germany ..	1,424	2,306	3,541	3,082
Switzerland ..	229	745	841	577
Other countries ..	1,630	2,707	2,858	6,390*
Total ..	10,824	13,092	12,778	16,943*

(c) Cloths, Cashmeres, etc., pure and mixed.||

	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
United Kingdom ..	1,265	1,111	625	472
Belgium§ ..	428	923	581	536
Italy ..	287	215	150	125
Switzerland ..	314	459	455	358
Germany ..	227	257	23	19
Algeria ..	371	91	71	†
Argentina ..	167	377	139	173
United States ..	464	322	235	228
Canada ..	1,706	493	116	66
Other countries }		2,919	1,520	1,421
Total ..	5,229	7,167	3,915	3,398

(d) Stuffs of Pure Wool (exc. Merinos and Printed Muslin).||

	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
United Kingdom ..	8,036	6,020	6,720	5,565
Belgium § ..	693	1,413	1,811	1,848
Italy ..	108†	161	225	245
Switzerland ..	54†	1,075	814	764
Germany ..	107†	4,019	1,048	334
Netherlands ..	74†	764	480	642
United States ..	685	300	529	496
Argentina ..	218	614	676	778
Other countries ..	1,091	3,088	4,369	6,482
Total ..	11,066	17,454	16,772	17,154

* Including export of dyed twisted yarn to all destinations, 3,868 metric tons. Details of destination are not available.

† Included with other countries.

‡ Figures for Italy and Netherlands are averages of 1910-13; figures for Germany and Switzerland are averages of 1911-13.

§ Belgo-Luxemburg Economic Union in 1924, 1925 and 1926.

|| Gross weights.

Destinations.	Average, 1909-13.	1924.	1925.	1926.
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(e) Woollen Carpets—Other than Knotted or Twisted Pile.

	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
United Kingdom	84	796	1,023	
Belgium* ..	270	230	168	Details
United States ..	13	149	169	not
Argentina ..	65	47	41	available.
Other countries	389	912	1,045	
Total ..	821	2,134	2,446	2,317

* Belgo-Luxemburg Economic Union in 1924, 1925 and 1926.

Before the war a considerable amount of worsted yarn spun in Alsace was sent to other parts of Germany and this trade has to some extent continued after the war (*see* p. 248). Cloths and cashmeres, and more particularly stuffs, represent staple lines of French manufacture which are exported largely to many parts of the world. As a result no doubt partly of depreciating exchange, exports in 1924, and in the case of stuffs in 1925 also, were markedly above the pre-war level. There was an increase in exports of stuffs both to continental countries, to Argentina and to unenumerated countries. Although these French manufactures may have no exact counterpart among British exports, they, too, are in substantial competition in many parts of the world.

Belgium.

The principal seat of the industry is Verviers, in the province of Liège, where some 16,000 workpeople out of 30,000 engaged in the whole of the Belgian wool textile industry are employed. For the most part, the Belgian mills were not seriously affected by war damage; and after the war some additional mills were acquired through the transfer of Eupen and Malmédy to Belgium from Germany under the Treaty of Versailles. In 1921 Belgium had 348,130 worsted spindles and 360,175 woollen spindles. The aggregate number of spindles is believed since then to have increased to 750,000.

The Belgian worsted industry is generally organised on the French system, but combing is apparently more closely connected with spinning than in Yorkshire or France. An important feature of the Verviers industry is the development of wool scouring and carbonising works, which treat large quantities of wool intended for other countries.

Belgium has to import nearly the whole of the raw wool required in the wool textile industry. The retained imports represented about 120 million lb. of greasy wool on the average of 1909-13. The average post-war importation has been somewhat less.

The wool used is mostly Australian, with River Plate and South African next in order. Considerable quantities of tops are also imported, mainly from France (8,218 metric tons out of a total of 9,385 in 1926).

Comparative figures relating to Belgian import and export trade in wool textiles are given below. It should be borne in mind that the post-war figures relate to the Belgo-Luxemburg Economic Union.

	Imports.				Exports.			
	1909-13 Average	1924.	1925.	1926.	1909-13 Average	1924.	1925.	1926.
		Metric Tons				Metric Tons.		
Woollen yarn ..	240	389	540	533	8,878	4,402	4,080	3,993
Worsted yarn ..	732	2,500	2,514	3,670	2,128	3,971	5,124	5,714
Woollen and worsted tissues.	3,346	3,207	2,326	1,870	1,476	2,034	2,113	2,105
Carpets (with curtains and tablecloths).	210	370	231	231	284	695	470	883

The export trade in yarns is considerable and exceeds the import trade. Noteworthy features are the post-war decline in exports of woollen yarn, and increase in both imports and exports of worsted yarn.

Belgian imports of tissues before the war exceeded exports. In 1924-26, exports were nearly 50 per cent. above the 1909-13 level, while imports steadily declined till there was an export balance in 1926. Before the war nearly half the quantity imported came from the United Kingdom, with Germany and France next in order. In 1924-26, over half the imports came from France, and less than one-third, on the average, from the United Kingdom.

The Tariff on woollen and worsted goods in 1926, reckoned *ad valorem*, was slightly less than in 1914.

Germany.

The wool textile industry in Germany is of long standing, and the consumption of wool doubled between the quinquennia 1875-79 and 1890-94. In 1895-99 it further increased to an average of 394·7 million lb. annually, and though it remained below that figure for the next ten years, it was much higher in 1909-13. The great bulk of the wool used is imported. The value of woollen manufactures exported from Germany showed on the whole no expansion between 1880-84 and 1900-04, but rose in the next quinquennium to £13·5 millions, falling again to £12·8 million in 1909-13.

Complete information as to the amount of machinery at a recent date is not available. It appears, however, that the number of worsted spinning spindles at the end of 1925 was 1,998,000, compared with 1,932,000 for the same area in 1912; while the number of worsted doubling spindles was 501,000 in 1925, compared with 432,000 in 1912. The number of combing machines in combined combing and spinning establishments was 1,514 at the end of 1925, to which must be added an (unstated) number of combing machines in commission combing establishments.

With the cession of Alsace at the end of the war, Germany lost a substantial section of her industry. The industry remaining in Germany is much scattered, but the principal centre is in Saxony and Thuringia, where the production of light worsted dress goods, men's suitings and fancy goods is largely carried on.

The worsted industry is to a large extent sectionalised, as in Great Britain. The weaving end is considerably further developed than are the earlier processes, and Germany ordinarily imports a large quantity of tops and yarns from Great Britain and elsewhere.

The character of Germany's import and export trade in wool textile products before and since the war is illustrated in the following table :—

	Imports.				Exports.			
	1909-13 Average	1924.	1925.	1926.	1909-13 Average	1924.	1925.	1926.
<i>In Metric Tons.</i>								
Tops	21,609	7,324	6,541	11,152	9,839	6,430	6,216	6,301
Worsted yarn ..	16,175	16,631	19,295	15,384	10,154	5,122	5,102	5,862
Woollen yarn ..	1,918	1,503	1,471	749	2,323	2,186	2,095	2,796
Alpaca, mohair, etc., yarn.	4,912	1,427	1,896	1,586	66	8	5	14
Total, tops and yarns.	44,614	26,885	29,203	28,871	22,382	13,746	13,418	14,973
Cloths, dress goods, etc.	2,660	4,175	2,146	1,074	24,015	9,996	10,534	13,746
Furniture fabrics	117	24	29	63	201	519	761	818
Curtains					281	49	36	40
Velvets and plushes					1,676	1,561	1,709	1,837
Netting					304	96	81	69
Carpets	1,130	96	400	113	2,201	2,882	2,463	2,706
Total fabrics ..	3,907	4,295	2,575	1,250	28,678	15,103	15,584	19,216

The loss of Alsace-Lorraine and other territorial changes affect the full comparability of the pre-war and post-war returns.

The import trade in tops and worsted yarns may be analysed further to show the quantities imported from the principal sources of supply :—

<i>(In Metric Tons.)</i>				
	1909-13, Average.	1924.	1925.	1926.
<i>Wool Tops—</i>				
From United Kingdom ..	7,164	4,296	3,285	2,240
Belgium	4,658	828	884	1,469
France	9,702	882	1,975	5,763
Alsace-Lorraine ..	—	359	99	771
Other countries ..	85	959	298	909
Total	21,609	7,324	6,541	11,152
<i>Worsted Yarns—</i>				
From United Kingdom ..	13,227	7,802	7,908	5,050
France	1,177	985	2,095	1,897
Alsace-Lorraine ..	—	1,630	1,747	1,513
Belgium	491	1,222	3,095	3,089
Other countries ..	1,280	4,992	4,450	3,835
Total	16,175	16,631	19,295	15,384

As imports from Alsace-Lorraine are shown separately, it is possible to make partial allowance for the break in comparability of the figures. What is not known is the amount imported into Alsace-Lorraine from foreign countries before the war.

While imports of tops from the United Kingdom fell heavily from the pre-war figure, it is noteworthy that (except in 1926) the British share in the aggregate import trade in tops was more than maintained. In the case of worsted yarn, however, the British share of the imports declined from 82 per cent. in 1909-13 to 47 per cent. in 1924, 41 per cent. in 1925, and 33 per cent. in 1926, while imports from Belgium and France increased. The trade in woollen yarns is smaller, but there, too, Belgium gained relatively to the United Kingdom. Alpaca and mohair yarns continued to be imported as before the war to an overwhelming extent from the United Kingdom, but the trade fell off heavily, mainly owing to change of fashion and the replacement of mohair by artificial silk in the making of plushes and pile fabrics and braids.

The consumption of tops in worsted spinning mills in the present area of Germany was ascertained to be as follows in 1912 and 1925 :—

	1912. <i>Metric Tons.</i>	1925. <i>Metric Tons.</i>
Tops of own production	24,163	21,563
Other tops produced in Germany	26,557	28,348
Imported tops	14,748	6,992
Total ..	<u>65,468</u>	<u>56,903</u>

From these figures it appears that the decline in the consumption of tops affected almost exclusively the imported tops. Corresponding figures for the yarn production of worsted spinning mills are as follows :—

	1912. <i>Metric Tons.</i>	1925. <i>Metric Tons.</i>
Worsted yarn, single or doubled :—		
Plain	32,077	31,739
Coloured or otherwise finished..	26,620	22,038
Other yarn	531	—
Total ..	<u>59,228</u>	<u>53,777</u>

The following table analyses the destinations of exports of tops, worsted yarns, and manufactures.

<i>(In Metric Tons.)</i>				
	1909-13, <i>Average.</i>	1924.	1925.	1926.
<i>Wool Tops—</i>				
To United Kingdom ..	23	78	65	64
Czechoslovakia ..	—	4,015	3,607	3,462
Austria-Hungary ..	7,252	—	—	—
Austria ..	—	244	174	103
Switzerland ..	619	583	343	250
Italy ..	742	162	101	88
Other countries ..	1,203	1,348	1,926	2,334
Total ..	<u>9,839</u>	<u>6,430</u>	<u>6,216</u>	<u>6,301</u>

		(In Metric Tons.)			
		1909-13.	1924.	1925.	1926.
		<i>Average.</i>			
<i>Worsted Yarns—</i>					
To United Kingdom ..	..	1,270	78	80	495
Czechoslovakia ..	..	—	595	537	445
Austria-Hungary ..	..	2,152	—	—	—
Sweden ..	..	958	934	1,040	1,237
Switzerland ..	..	606	569	413	274
Japan ..	..	1,165	1,336	1,744	1,545
Other countries ..	..	4,003	1,610	1,288	1,866
Total ..	..	10,154	5,122	5,102	5,862
<i>Cloths, Dress Goods, etc.—</i>					
To Western Europe* ..	..	12,483	4,540	5,402	7,807
Of which to—					
United Kingdom ..	..	3,538	504	992	2,966
France ..	..	722	4	4	6
Netherlands ..	..	2,046	1,033	1,329	1,626
Belgium ..	..	760	68	37	58
Italy ..	..	1,093	247	312	245
Switzerland ..	..	1,756	644	757	796
Norway ..	..	695	297	320	353
Sweden ..	..	694	821	764	751
Denmark ..	..	1,179	846	854	1,004
To Eastern Europe † ..	..	4,585	3,540	2,985	3,013
To United States ..	..	1,071	582	543	590
Argentina and Chile ..	..	1,482	214	302	359
China and Japan ..	..	945	367	279	497
British India ..	..	1,079	138	227	300
Other countries ..	..	2,370	615	796	1,180
Total ..	..	24,015	9,996	10,534	13,746
<i>Furniture Tissues—</i>					
To Sweden and Denmark ..	..	35	31	36	36
Netherlands ..	..	16	183	347	364
United Kingdom ..	..	46	84	207	241
Switzerland ..	..	15	29	26	20
Other countries ..	..	89	192	145	157
Total ..	..	201	519	761	818
<i>Velvets and Plushes—</i>					
To Norway, Sweden,					
Denmark ..	..	219	165	132	150
Netherlands ..	..	101	243	279	277
United Kingdom ..	..	541	313	412	526
Switzerland ..	..	146	159	148	132
Italy ..	..	79	140	166	36
United States ..	..	70	16	46	74
Argentina ..	..	32	37	64	68
Other countries ..	..	488	488	462	574
Total ..	..	1,676	1,561	1,709	1,837

* i.e. the countries specified in the Table (Saar Basin included in 1924, 1925 and 1926).

† Russia, Finland, Baltic States, Poland, Dantzic, Memel, Austria, Hungary, Czechoslovakia, S.H.S. State, Bulgaria, Roumania, Turkey.

		1909-13.	(In Metric Tons.)		
			1924.	1925.	1926.
<i>Carpets—</i>	<i>Average.</i>				
To United Kingdom ..	..	292	742	537	519
Netherlands ..	..	358	662	604	610
Denmark ..	..	160	288	131	260
Switzerland ..	..	211	186	238	221
United States ..	..	37	251	189	147
Argentina ..	..	107	31	30	35
Other countries ..	..	1,036	722	734	914
Total ..	..	2,201	2,882	2,463	2,706

Exports of cloths and dress goods, etc., were consigned before the war to the extent of about 71 per cent. to European countries. Since the war dependence upon the European markets has been relatively even greater, for in 1924, 1925 and 1926, about 80 per cent. of the exports of cloths, dress goods, etc., were consigned to European countries. Nevertheless, exports to Europe in 1926 were less than two-thirds (in 1925 less than half) the pre-war volume.

The figures relating to furniture tissues, velvets and plushes and carpets tell a different story, for in each case the total exports in 1926 were in excess of the pre-war average. In the case of velvets and plushes at any rate this is the more remarkable in that Alsace was an important producer. The figures relating to furniture tissues and carpets show striking increases of exports to the United Kingdom and the Netherlands. It may be added that the German export trade in velvets and plushes and to a less extent in carpets was rapidly expanding in the years immediately before the war.

Italy.

The Italian wool textile industry is of relatively modern origin, and it has expanded considerably in the years since the war. Some 75,000 persons are employed in the industry, the main centre of which is the town of and district round Biella in Piedmont, where it is assisted by the large amount of water power available. The following figures relating to the numbers of combs, spindles and looms in particular years indicate the rapid development of the industry; and as a result of renewals of machinery since the war the mills are now well equipped on modern lines.

			Number of Spindles.			Number of Power Looms.
		Number of Combs.	Woollen.	Worsted.	Total.	
1894 ..	..	65	251,322	94,228	345,550	6,507
1907 ..	..	92*	230,000	259,796	489,796	10,567
1913 ..	..	225	520,795	377,538	898,333	17,029
1923 ..	..	555	550,000	500,000	1,050,000	18,000
1925 ..	..	630	600,000	550,000	1,150,000	21,000

* Year 1906.

The importation of wool is largely in the hands of the Istituto Commerciale Laniero Italiano, a limited company with a capital of 30 million lire, which was formed by the spinners to finance the trade and purchase raw material, and which has its own agents in Australia and South America. To meet her increased requirements, Italy has had to import more raw wool (especially greasy wool) than before the war. On the other hand, her imports of tops (mainly derived from France) are much reduced, as might be expected from the great increase in the number of combs in Italy.

The Czechoslovak industry is concentrated largely in three areas:— (1) In the North of Bohemia, especially around Liberec (Reichenberg); (2) in Moravia, especially around Brno (Brünn) and Eastern Bohemia; and (3) in Silesia, especially around Opava (Troppau) and Kmnov (Jaegerndorf).

Czechoslovakia, like Austria-Hungary before the war, has to import nearly the whole of its raw wool supplies. Before the war, the Austro-Hungarian industry imported considerable quantities of tops (over 10,000 metric tons on the average in 1909–13), mainly from Germany; and though it exported a fair amount of worsted yarn, it imported a much greater quantity, the larger part of which (together with nearly all the mohair and alpaca yarn imported) came from Great Britain. Comparison with post-war statistics is affected by territorial changes, but the position as regards tops remained much the same, except that France joined with Germany in supplying the bulk of the imports. The imports both of worsted and of alpaca and mohair yarn in 1926 came mainly from Great Britain, as before the war. In the same year also Czechoslovakia figured as an exporter of yarn on an increased scale, Germany, Japan and Poland being the main destinations apart from Austria and Hungary.

As regards tissues, the industry was largely engaged before the war in providing for the internal needs of the Austro-Hungarian Empire, but there was in addition an important export trade (about 5,000 tons on the average of 1909–13) of which about half went to the Balkans and the Near East. As a result of the war settlement, the wool textile industry of Czechoslovakia lost the advantage of an assured market in the other Succession States, as these became foreign countries and tended to exclude Czechoslovak goods by tariff barriers.

The export trade of Czechoslovakia in wool tissues may be illustrated by the following figures:—

				<i>Exports.</i>		
				<i>Metric Tons.</i>		
				1924.	1925.	1926.
<i>Total</i>	..	..	..	9,167	8,825	8,169
Total, excluding						
Austria and Hungary	..	..	..	3,918	4,758	4,628
of which to—						
S.H.S. State	..	..	..	829	1,006	1,021
Roumania	..	..	..	592	495	426
Turkey	..	..	..	146	153	165
Bulgaria	..	..	..	73	49	35
Egypt	..	..	..	164	180	133
Great Britain	..	..	..	371	645	627
Germany	..	..	..	284	409	357

It will be seen that the Balkans and Near East remain an important market, but the purchasing power of those countries is certainly not what it was before the war, and the discovery of new markets is consequently a pressing problem. Exports to Great Britain in 1924, 1925 and 1926 were substantially greater than the corresponding exports in 1909–13 from the whole Austro-Hungarian Empire (average 310 tons) and a slight advance has been made in China and Japan, but, on the whole, the problem has not yet been solved.

In the carpet trade a considerable advance has been made by Czechoslovakia in developing external markets. The exports of woollen carpets from the Austro-Hungarian Empire on the average in 1909–1913 amounted to some

379 metric tons, the principal destinations being United States 82 tons, Great Britain 79 tons, France 25 tons. In 1924, 1925 and 1926 the exports from Czechoslovakia were :—

		1924.	1925.	1926.
		<i>Metric Tons.</i>		
<i>Total</i>	.. .. .	2,100	2,075	2,074
Total, excluding				
Austria and Hungary	.. .. .	1,757	1,685	1,716
of which—				
Great Britain	.. .. .	812	751	654
U.S.A.	.. .. .	376	349	472
Netherlands	.. .. .	195	171	135

Poland.

Pre-war Russia is said to have possessed some 1,500,000 woollen and worsted spindles and some 51,000 looms, and to have lost some 1,000,000 spindles and 31,000 looms through the separation of Poland and the Baltic States. The bulk of these spindles and looms fell to Poland. Including machinery in the area acquired from Austria, the present territory of Poland is estimated to have possessed before the war 586,000 woollen spindles, 552,000 worsted spindles and 23,000 looms. The number of operatives exceeded 50,000. Recent (post-war) particulars give the equipment of the Polish industry as 511,000 woollen spindles, 403,000 worsted spindles and 17,200 looms.

The wool textile industry has three principal centres, viz.: (1) Lodz, some 70 miles south-west of Warsaw; (2) Bialystok, some 100 miles north-east of Warsaw; and (3) Bielsk and Biala, in Galicia. The mills at Lodz, as in other parts of Russian Poland, were considerably damaged during the war but have since been substantially restored.

Lodz has a few large undertakings of a modern kind and a great number of small and very small undertakings. About half the wool worked before the war was of Russo-Polish origin, the use of this wool (which was largely of inferior quality) being encouraged by a tariff on imported raw wool. Since the war non-Russian wool has necessarily played a larger part.

The wool textile industry of Poland since the war has been affected by the loss (for the time being at any rate) of the Russian market, which previously took a large part of the products of the industry of Lodz and Bialystok. Notwithstanding the extension of the Polish frontiers since the war and the separation of the Baltic States, the recovery of the Polish industry is probably to a certain extent dependent on the restoration of a market in present-day Russia or the discovery of alternative markets.

The pre-war Russian Empire was a considerable purchaser of tops and yarns, largely no doubt for consumption in the Polish mills. The aggregate imports in 1913 amounted to 1,459 metric tons of tops and 6,374 metric tons of yarns. The principal source of supply was Germany (809 tons of tops and 3,188 tons of yarns) with Great Britain second (374 tons of tops and 2,698 tons of yarns). Exports were insignificant.

The imports of tops and yarns into Poland in 1924, 1925 and 1926 were much smaller than the imports of 1913 into pre-war Russia. Tops averaged about 700 tons, mainly from France, Great Britain, and Germany. Yarns were over 1,000 tons, and though Great Britain remained one of the principal suppliers (with Germany and Czechoslovakia) the quantity supplied

by this country fell short of the 1913 import into Russia by over 2,400 tons. In the case of yarns a substantial export trade has grown up (2,657 tons in 1924, 1,469 in 1925 and 1,486 tons in 1926), exceeding the amount of the import trade. The bulk of the exported yarn is consigned to Germany.

The trade of Russia in 1913 in wool manufactures (other than carpets and hosiery) included 3,439 metric tons of imports (over half from Germany) and 608 tons of exports.

The trade of Poland in the corresponding articles was, on the average of 1924, 1925 and 1926, 528 metric tons of imports and 633 tons of exports. Details for the individual countries are not fully available, but it is known that imports continue to be largely from Germany.

United States of America.

The wool textile industry of the United States is largely concentrated in New England (where about 60 per cent. of the machinery is situated), and in the States of New York, New Jersey and Pennsylvania (which together contain about 25 per cent. of the machinery). Worsteds production was established in the United States about the middle of the last century, and the industry generally is not of such long standing as in this country, or in European countries like France and Germany, but it has developed rapidly under the shelter of a protective tariff, and it now ranks next in size to that of the United Kingdom.

The statistical data available regarding the industry are much fuller than those compiled in any European country.

The following table shows the number of wage earners engaged in the industry in 1899 and 1904, 1909, 1914, 1923, and 1925 the years for which statistical data will generally be given in this Sub-Section.

Number of wage-earners. (In thousands).

—	1899.	1904.	1909.	1914.	1923.	1925.
Woollen goods ..	68.9	72.7	52.2	49.2	72.4	67.1
Worsted goods ..	57.0	69.3	111.0	109.5	122.2	98.2
Felt goods	2.7	3.3	3.5	4.0	5.7	5.1
Carpets and rugs..	28.4	33.2	33.3	31.3	35.2	33.9
Wool shoddy	—	—	1.9	2.1	2.1	2.2
Wool pulling	0.5	0.7	0.6	0.7	0.7	0.6
Wool scouring .. .	0.7	0.8	1.1	1.1	1.5	1.1
	158.2*	180.0*	203.6	197.9	239.8	208.2

* Excluding wool shoddy.

The table shows that while the number of persons engaged in producing worsteds is much greater than that in any other class, and increased by two thirds between 1899 and 1925, it actually declined between 1914 and 1925. On the other hand, the number of persons making woollen goods declined substantially prior to 1914, but increased by over one-third between 1914 and 1925.

While the number of persons engaged in the industry has been increasing, the number of establishments has been diminishing, indicating an increase in the average size of establishment. The following table shows the number of establishments in the years mentioned above:—

Number of Establishments.

—	1899.	1904.	1909.	1914.	1923.	1925.
Woollen goods ..	1,035	792	587	501	513	503
Worsted goods ..	186	226	324	298	338	329
Felt goods ..	36	39	43	53	53	50
Carpets and rugs	133	139	139	97	79	69
Wool shoddy ..	—	—	80	64	59	68
Wool pulling ..	34	34	37	34	27	23
Wool scouring ..	25	27	28	24	26	25
Total ..	1,449*	1,257*	1,238	1,071	1,095	1,067

* Excluding Wool shoddy.

The average size of woollen factories has increased since 1899 much more than that of worsted factories, but the average size of the latter is still much larger, the average number of persons employed in 1925 being 298 for worsted, and 133 for woollen establishments. In the whole industry (excluding wool shoddy) the average number of employees per establishment was 206 in 1925 (as compared with 194 in 1914 and 109 in 1899).

The industry includes one very large combination, unparalleled as regards size in any other country; this is the American Woollen Company, which was formed in 1899 following a period of severe depression in the industry, and which now possesses about 750,000 spindles and 9,800 looms. The company is said to be almost alone among American wool textile concerns in possessing a research department.

One of the factors favouring the large average size of establishments in the United States is no doubt the extent to which the standardisation of fabrics has been carried in that country. This has been promoted by the fact that production is almost exclusively for an internal market, and by the widespread habit of buying ready-made clothing. There is thus a relatively great demand for standardised kinds of goods, and such cloths (which so far as raw material and texture are concerned may be of high grade) are manufactured by large American mills in vast quantities.

Another distinctive feature of the industry in America is the closer relation between the various processes in the worsted section than is common in this country or on the Continent of Europe. This is due to the worsted section having been originally organised in America on integrated lines, and, though a tendency towards sectionalisation subsequently developed, this has not yet been carried as far as in other European countries. It may be mentioned that the American worsted industry is based mainly on the Bradford system of combing, although the French system is followed in a few large mills.

The following table shows the extent of the equipment of the American wool textile industry in the selected years :—

Year.	Sets of Cards.	Combs.	Spindles.			Wool- len and Wor- sted Looms.	Carpet and Rug Looms.
			Woollen.	Worsted.	Total.		
1899 ..	6,605	1,451	2,031,028	1,325,255	3,356,283	63,447	10,896
1904 ..	6,142	1,549	2,280,042	1,630,643	3,910,685	66,293	11,692
1909 ..	5,555	2,120	2,022,454	2,398,496	4,420,950	73,268	11,943
1914 ..	5,382	2,425	1,914,691	3,010,145	4,924,836	76,789	9,852
1919 ..	5,835	2,294	2,201,666	2,988,855	5,190,521	77,338	8,157
1926 ..	7,256	2,790	2,401,131*	2,711,807*	5,112,938*	81,302	9,596

* Excluding doubling and twisting spindles. The number of these in 1919 was 796,434, of which 90,733 were woollen spindles and 705,701 worsted spindles. The division of the aggregate number of spindles in 1926 between woollen and worsted is partially estimated.

The growth of the equipment over the whole period has been substantial. Since 1914 the number of spindles and looms have increased considerably. An increase has also taken place in the number of combs; and in this connection it is significant to observe that the imports of tops in post-war years have been only a small fraction of the amount entered for consumption immediately before the war. It appears, therefore, that the industry has become more self-sufficing; and it may be noted in the same connection that there has been a decline in the imports of yarn in post-war compared with pre-war times. During the same period there has been a great increase in the tariff rates on tops and yarns, which amounted to about 16 per cent. *ad valorem* in 1914 and 65 per cent. in 1926.

The production of some of the principal products as shown by the Census of Manufactures may next be given.

Output in Thousands of Square Yards.

	1899.	1904	1909.	1914.	1923.	1925.
Suitings, dress goods, Overcoatings and Cloakings—	354,300	413,948	492,841	455,044	512,139	460,922
All wool woollen	86,622	113,773	84,642	90,950	172,028	153,323
All wool worsted	112,623	127,079	226,111	222,421	210,988	179,163
Wool and cotton mixed	48,032	52,167	27,519	31,400	24,732	26,124
Cotton warp wool- len	48,575	54,940	60,236	53,510	63,203	60,933
Cotton warp wor- sted	58,448	65,989	94,333	56,763	41,188	41,379
Flannels for under- wear (all wool)	9,325	8,710	3,856	2,176	2,843	672
Flannels for under- wear (cotton mixed)	6,217	7,274	7,064	4,996	3,777	999

Output in Thousands of Square Yards.—continued.

	1899.	1904.	1909.	1914.	1923.	1925.
Domest flannels and shirtings	4,555	4,286	4,572	16,092	6,155	7,206
Satinets and Linseys	13,052	22,339	5,102	8,415	6,107	11,877
Blankets, all wool	5,454	7,316	5,138	6,490	11,872	11,084
Carpets and rugs	76,410	82,671	81,219	86,340	83,242	72,100

This table shows that while production in some of the smaller categories has been declining, the output generally greatly increased. The figures confirm the indications of the tables given above that since 1914 the woollen section of the industry has made a great advance, while the worsted section has declined. They are also in harmony with British experience that the demand for pure worsteds has been better than for mixed worsteds.

During the last few years, the industry has been working considerably below its productive capacity. Thus, of wide looms 19 per cent. were idle in 1923, 30 per cent. in 1924 and 1925, and 40 per cent. in 1926.

According to a recent work by an American author* a gradual improvement in the quality of American production has been taking place since the middle 90's as the result of urban concentration in America, rising wealth, and increased tariff rates. The production of high-grade goods now represents, perhaps, 15 to 20 per cent. of the total production of cloth; and American production now extends to practically every variety of goods.

In spite, however, of the increase in quantity and improvement in quality of American wool textile products, and the increase in tariff rates on fully manufactured goods from 35 per cent. *ad valorem* in 1914 to about 63 per cent. in 1926, the imports of such goods (while small relatively to the total domestic production) are still considerable, as will be seen from the following table. The figures in the table are, to some extent, approximate as, owing to changes of classification and of the unit of enumeration, the quantities are based partly on estimates.

Imports of Woven Fabrics (Woollen and Worsted).

—				Average of 1909-10 to 1913-14.	Year 1924.	Year 1925.	Year 1926.
				Mill. lb.	Mill. lb.	Mill. lb.	Mill. lb.
Total	..	..	..	13.5	11.9	10.5	10.3
From United Kingdom	..	..	..	7.9	9.4	8.0	7.9
France	..	..	..	2.2	0.8	0.9	0.6
Belgium	..	..	..	0.6	0.2	0.2	0.3
Germany	..	..	..	2.5	1.2	1.0	1.0
Other countries	..	..	..	0.3	0.3	0.4	0.5

It will be seen that while total imports of fabrics declined, imports from the United Kingdom were somewhat greater and represented about four-fifths of the total. In view of the very heavy tariff rates in force, it seems probable that these imports consist mainly of goods which, by reason of their high quality or special character, meet a demand which cannot be supplied by the American industry.

* The American Wool Manufacture, by A. H. Cole, Harvard University Press, 1926, Vol. II, p. 175, etc.

Similar reasons probably explain the large increase which has taken place in the imports of carpets and carpeting, as shown in the following table, since the increase is particularly marked in the case of carpets from China, Persia and India, with their distinctive designs.

Imports of Carpets and Carpeting. (Thousands of Square Yards.)

			<i>Average of 1909-10 to 1913-14.</i>	<i>Year 1924.</i>	<i>Year 1925.</i>	<i>Year 1926.</i>
Total	..	..	1,042	2,804	2,939	3,292
From United Kingdom	..	..	152	415	342	424
Czechoslovakia	..	..	29*	121	119	213
Germany	..	..	20	149	128	110
Turkey in Europe	..	..	334	254	226	208
Turkey in Asia	..	..	94	46	112	192
British India	..	..	34	192	251	214
China	..	..	6	711	685	671
Persia	..	..	305	591	652	888

* Austria-Hungary.

The American wool textile industry markets its goods almost exclusively in the United States, and the extent to which the industry is a product of the tariff and is still substantially dependent on it is shown by the impossibility of maintaining any considerable export trade in wool textiles. During the war, indeed, a large export was developed, the American Woollen Company organising a subsidiary undertaking to market its products abroad; but after the war it became increasingly clear that it was impossible to compete successfully with foreign rivals, and the export organisation mentioned above was wound up in 1921. The aggregate value of American wool textile manufactures (including carpets but excluding hosiery and apparel) exported in 1926 was no more than 2,206,000 dols., while the value of imported goods was 44,550,000 dols. The exports are sent largely to Cuba and the West Indies, Mexico, Canada and the Philippine Islands.

Canada.

The manufacture of wool textiles in Canada, which originated in the handicraft industry introduced by the early French settlers, has made considerable progress as a factory industry, but it still remains necessary for the country to import large quantities of wool textile products. The course of the industry, both before and since the war, has been subject to severe fluctuations. Thus a serious depression after 1899 put a substantial amount of machinery out of operation, though the quantity of machinery in the industry subsequently increased again, helped as it was by a substantial tariff on imported manufactures. As a result of the new equipment and enlargements made possible by using the profits of the war period, the industry by 1922 was larger and better equipped than it had been before the war. Since that time further fluctuations have occurred which have reduced the

amount of machinery in operation. The following table relates to the equipment of the mills in operation in various years :—

Year.	Sets of Cards.	Combing Machinery	Spindles.			Looms.
			Woollen.	Worsted.	Total.	
1885 ..	515	—	—	—	107,870	1,885
1910 ..	224	—	—	—	—	1,154
1920 ...	402	22	133,288	27,178	165,798	1,869
1922 ..	433	27	142,105	87,826	229,931	2,045
1924 ..	413	36	111,448	59,886	171,334	1,766

In the figures for looms two narrow looms have been taken as equivalent to one broad loom.

The development of the worsted branch since 1920 is noteworthy, and the figures also indicate a growth of weaving since 1910.

The results of these developments, coupled with the lack of expansion in demand, have been that, comparing post-war (average of 1924-25 to 1926-27) with pre-war years (1913-14), imports of tops have undoubtedly increased (though figures as to pre-war imports into Canada are lacking) ; and imports of yarn and cloth have diminished. These changes mainly affect Great Britain, since in practically every branch of wool textile imports, goods from this country predominate over imports from all other sources combined. This is clearly shown by the following table. The import statistics for tissues do not yield comparable figures of quantities ; but, as the value of the imports in the post-war years was only 50 per cent. higher than in 1913-14 (24·3 million dollars as against 16·3 millions), it may be assumed that the quantities were lower.

Imports into Canada.

		1913-14.	1924-25.	1925-26.	1926-27.
		<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>
<i>Wool Tops</i> ..	..	Informa-	5,164	5,572	7,472
Of which		tion			
from United Kingdom	..	not	4,317	5,085	6,588
United States	..	avail-	253	145	323
Australia	..	able	393	155	210
France	..		124	172	278
<i>Woollen and worsted yarns</i> ..	..	4,529	2,879	2,847	3,581
Of which					
from United Kingdom	..	4,366	2,732	2,729	3,376
United States	..	27	22	40	23
France	..	43	114	72	152
		<i>Th. dol.</i>	<i>Th. dol.</i>	<i>Th. dol.</i>	<i>Th. dol.</i>
<i>Woollen and worsted tissues</i> ..	..	16,269	24,404	23,385	26,343
Of which					
from United Kingdom	..	14,488	20,274	19,586	21,353
United States	..	306	671	634	522
France	..	996	3,030	2,577	3,429

Imports into Canada.—continued.

			1913-14.	1924-25.	1925-26.	1926-27.
			<i>Pairs.</i>	<i>Pairs.</i>	<i>Pairs.</i>	<i>Pairs.</i>
<i>Blankets</i>	..	..	60,714	148,727	125,429	143,359
Of which						
from United Kingdom	..		46,608	136,893	109,306	127,359
United States	..		6,069	11,262	11,302	11,401
			<i>Th. dol.</i>	<i>Th. dol.</i>	<i>Th. dol.</i>	<i>Th. dol.</i>
<i>Carpets, tapestry and velvet</i>	..		1,142	820	816	930
Of which						
from United Kingdom	..		1,103	672	643	681
United States	..		12	73	51	58
<i>Oriental carpets, hand-woven squares and hearth rugs</i>	..		1,396	1,066	977	1,251
Of which						
from United Kingdom	..		1,149	471	379	571
United States	..		63	107	92	98

The United Kingdom enjoys a preferential tariff in trade with Canada. Under this the *ad valorem* duty on wool manufactures, other than tops and yarns, was 25 per cent. in 1926, compared with 30 per cent. in 1914. The general tariff was 35 per cent. in both years, and there was an intermediate tariff in 1926 of 29½ per cent. By a Franco-Canadian Convention which came into operation in 1923, superseding a Convention of 1907, French goods to which the Intermediate Tariff had been applied since 1907 were in addition granted a further discount in many cases of 10 or 15 per cent. from the duties so leviable. These Convention rates, which affected some important classes of wool textiles, have since been extended to goods from other countries enjoying most favoured nation treatment. As a partial set off, a discount of 10 per cent. of the duty leviable was granted to British goods entitled to enter under the British Preferential Tariff, provided such goods were subject to a duty exceeding 15 per cent. *ad valorem*.

Australia.

The manufacture of woollens and tweeds was carried on to a small but increasing extent for many years before the war, and woolcombing was also carried on for some years before the war. The wool textile industry was markedly stimulated owing to the scarcity and high price of imported goods during and immediately after the war, and a number of new mills were established. In this development British firms played no small part. The following statistics illustrate the advance made in comparison with 1913:—

Year.			Number of Factories.	Number of Employees	Production.		
					Tweed and Cloth. Thousand Yards.	Flannel. Thousand Yards.	Blankets, Shawls and Rugs. Thousands.
1913	..	..	22	3,090	2,750	5,565	880
1925-26	..	..	50	8,735	5,993	6,172	937

The factories are mainly situated in Victoria and New South Wales, and the figures given above exclude scouring works and a number of mills manufacturing hosiery and underclothing.

Following the war the Australian industry felt the effects of renewed competition from imported woollen and worsted goods. Production of tweed and cloth reached a maximum of 6,350,000 yards in 1920-21, flannel a maximum of 7,829,000 yards in 1922-23, and blankets, etc., a maximum of 1,206,000 in 1923-24. In 1921, and again in 1926, the rates of duty were sharply increased, particularly in the case of woollen and worsted piece goods of kinds which are made in Australia. Before the war, wool piece goods were subject to a General Tariff of 30 per cent., and a British Preferential Tariff of 25 per cent. The Customs Tariff, 1921, provided for a general tariff of 45 per cent., an intermediate tariff of 40 per cent., and a British Preferential Tariff of 30 per cent. The Tariff of 1926 provides that piece goods (other than flannel) "ordinarily used in the manufacture of outer clothing for human wear and weighing more than 6½ oz. per square yard—the invoice selling value of which does not exceed the equivalent of 3s. 4d. per square yard"—are to be subject, in addition to the *ad valorem* rates of the 1921 tariff, to a specific duty fixed at 2s. per square yard under the General Tariff, 1s. 6d. under the Intermediate Tariff, and 1s. under the British Preferential Tariff. Thus piece goods of this class invoiced at 3s. 4d. pay in the aggregate 60 per cent., *ad valorem* under the British Preferential Tariff, and cheaper goods pay a still higher percentage. Piece goods "of a class or kind not produced in Australia" are liable to a General Tariff of 25 per cent., an Intermediate Tariff of 20 per cent., and a British Preferential Tariff of 15 per cent. Other piece goods are liable to respective rates of 50 per cent., 45 per cent., and 35 per cent.

The Tariff on wool yarns was also heavily increased in 1923 and 1926. Before the war there was a General Tariff of 10 per cent., and a Preferential Tariff of 5 per cent., *ad valorem*. The 1926 rates are 35 per cent., 30 per cent., and 20 per cent. respectively. The Preferential Tariff rates on blankets and carpets remain at the pre-war level, namely 25 per cent. and 10 per cent. respectively.

These tariff increases appear to have stimulated production in Australia and to have checked the import of woollen goods and yarns.

Apart from Australian competition, British exporters of wool textile goods to the Australian market neither met before the war nor meet at the present time, broadly speaking, any serious competition from other manufacturing countries. During the five years 1909-13 the United Kingdom furnished in value some 85 per cent. of the piece goods, some 94 per cent. of the yarns and some 72 per cent. of the flannels imported into Australia; and in 1925-26 the corresponding figures were 93 per cent., 100 per cent., and 90 per cent. The only substantial import in the latter year from countries other than the United Kingdom was of certain kinds of piece goods from France.

The Australian Trade Accounts do not show quantities of wool textile goods imported. The exports of wool textiles from the United Kingdom to Australia in 1909-13, and in 1924 to 1926 (or 1927) are shown in the tables on pages 191, 194, 197 and 198, and it will be seen that while the export of yarns and of carpets and rugs increased, exports of woollen and worsted tissues, flannels and delaines and blankets declined. This falling-off may be partly explained by increased manufacturing in Australia.

Australia does not export wool textile products to a substantial amount, with the exception of tops. Under the Bounties Act, 1907, bounties to the aggregate amount of £10,000 per annum were payable on exports of tops, and any unexpended sum was carried forward to subsequent years. The bounty paid was at first 1½d. per lb., and subsequently 1d.; and with this

stimulus a considerable trade sprang up. Exports of tops grew rapidly from 496,500 lb. in 1909 to 3,562,000 lb. in 1913, 5,000,000 lb. in 1923-1924, 4,100,000 lb. in 1924-25 and 6,000,000 lb. in 1925-26. The bulk of the exports go to Japan, with small quantities to the United Kingdom, Canada, Belgium. Since the war, the bounty on tops has been withdrawn.

New Zealand.

Like Australia, New Zealand had a few wool textile mills before the war. Production expanded during and immediately after the war, but has since fallen and is in some branches below the pre-war level.

—	Number of Mills.	Number of Em- ployees.	Production.				
			Tweed. Th. Yds.	Flannel. Th. Yds.	Blankets Th. Pairs.	Rugs and Shawls. Th.	Yarn. Th. Lbs.
1905 ..	10	1,549	1,300	1,368	60	24	259
1910 ..	11	1,410	1,161	1,141	67	49	260
1925-26	12	2,326	990	1,073	128	71	472

The production of tweed and flannel in 1925-26 was considerably below the maximum post-war production, viz., 1,648,000 yards of tweed in 1920-21, and 1,527,000 yards of flannel in 1922-23.

Before the war wool textiles were liable to a uniform import duty of 20 per cent. Since 1921 there has been a General Tariff of 35 per cent., an Intermediate Tariff of 30 per cent., and a British Preferential Tariff of 20 per cent. The *ad valorem* rate of duty on British goods is, therefore, the same as before the war; while, in addition, a preference has been accorded by raising the duty on imports from other countries.

Neither before the war nor during the past few years have British wool textile imports into New Zealand met with serious competition from other imports. The exports of wool textile products from the United Kingdom to New Zealand in 1909-13 and in 1924 to 1926 (or 1927) are shown in the tables on pages 194-8, and, as in the case of Australia, the figures show expansion in exports of yarns and of carpets and rugs, but a substantial falling-off in exports of woollen and worsted tissues, flannels and delaines and blankets.

Union of South Africa.

Apart from its position as a producer and exporter of raw wool (*see* page 240) and mohair, the importance of the Union of South Africa in the wool textile trade is mainly that of a consumer of imported manufactures. The local manufacturing industry is at present undeveloped.

The import statistics show values, but not quantities. The figures for 1924, 1925 and 1926 are summarised, together with the averaged results for 1909-13, in the following table, the main features of which are discussed on p. 225.

Value of Imports into Union of South Africa.

—	1909-13 Average.	1924.	1925.	1926.
<i>Cloth and Piece Goods—</i>				
From United Kingdom	£ 272,603	£ 749,551	£ 855,199	£ 1,055,755
Belgium	536	3,357	7,838	14,322
France	21,178	39,833	34,745	68,288
Germany.. ..	14,928	1,478	4,218	12,571
Netherlands ..	1,288	12,294	14,046	18,276
Italy	547	1,812	11,023	20,029
Austria-Hungary	227	—	—	—
Czechoslovakia ..	—	1,632	9,309	17,929
Other countries ..	1,749	3,553	6,292	2,654
Total ..	313,056	813,510	942,670	1,209,827
<i>Blankets—</i>				
From United Kingdom	320,815	376,305	304,147	386,455
Belgium	2,309	5,496	3,327	1,663
France	2,852	12,290	18,397	28,117
Germany.. ..	12,300	12,392	16,902	47,572
Italy	9,234	30,316	19,415	19,952
Other countries ..	1,569	8,697	6,073	6,537
Total ..	349,079	445,496	368,261	490,296
<i>Woollen Shawls—</i>				
From United Kingdom	46,498	56,893	35,978	12,683
Germany.. ..	10,096	2,508	3,292	2,417
Italy	1,035	15,910	10,030	960
Austria-Hungary	524	—	—	—
Czechoslovakia ..	—	1,751	3,270	870
Other countries ..	840	1,587	902	743
Total ..	58,993	78,649	53,472	17,673

India.

Apart from carpets and rugs the Indian manufacturing industry is small. In the whole of India, including the Native States, there were in 1925 sixteen mills containing 90,000 spindles and 2,000 looms, and employing some 8,800 persons. These figures show an advance upon 1914, when there were seven mills with 40,900 spindles and 1,200 looms, employing 4,700 persons. Various classes of woollen and worsted goods are made and some of the mills manufacture blankets. Apart from the machine-using industry, there is a considerable handicraft industry, both spinning and weaving; and the carpet industry is mainly a handicraft industry.

India is a large importer of woollen and worsted manufactures, and an exporter of carpets. The following figures enable a comparison to be made of the volume of trade during the five fiscal years immediately preceding the war and in the three completed fiscal years to March, 1927 :—

Imports into India in Years ending 31st March.

	1909-10 to 1913-14. <i>Average.</i>	1924-25.	1925-26.	1926-27
	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>
<i>Yarn and Knitting Wool—</i>				
From United Kingdom	171	524	476	568
Germany.. ..	573	304	401	307
France	35	39	72	78
Austria-Hungary	78	1.8*	2.9*	2.3
Czechoslovakia ..	—	—	10	22
Other countries ..	30	14.2	76	63
Total ..	877	883	1,038	1,040
<i>Piece Goods—</i>	<i>Th. yd.</i>	<i>Th. yd.</i>	<i>Th. yd.</i>	<i>Th. yd.</i>
From United Kingdom	15,189	6,015	5,282	5,983
Germany.. ..	4,958	1,036	978	1,393
Netherlands ..	176	165	155	173
Belgium	135	511	1,253	727
France	1,238	1,328	1,902	2,237
Italy	114	1,678	2,854	3,575
Austria-Hungary	500	4*	8*	5*
Czechoslovakia ..	—	11	15	42
Japan	5	1,048	2,061	1,230
Other countries ..	105	75	68	60
Total ..	22,420	11,871	14,576	15,425
<i>Shawls—</i>	<i>Thousands.</i>	<i>Thousands.</i>	<i>Thousands.</i>	<i>Thousands.</i>
From United Kingdom	220	168	171	173
Germany.. ..	1,299	176	234	361
France	20	5	22	36
Italy	17	59	119	358
Austria-Hungary	100	—	—	—
Czechoslovakia ..	—	1	3	1
Other countries	12	11	21	50
Total ..	1,668	420	570	979'
<i>Carpets and Rugs—</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>
From United Kingdom	949	336	485	330
Germany.. ..	164	12	50	63
Italy	210	212	708	1,351
Persia	30	35	67	100
Other countries ..	47	29	71	50
Total ..	1,400	624	1,381	1,894

* Austria only.

Imports into India in Years ending 31st March.—continued.

	1909-10 to 1913-14. <i>Average.</i>	1924-25.	1925-26.	1926-27.
	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>
<i>Other Sorts of Manufactures (excluding hosiery and braids)—</i>				
From United Kingdom	896	982	974	665
Germany.. ..	119	79	398	594
France	133	32	76	99
Italy	18	25	107	189
Other countries ..	40	32	80	100
Total ..	<u>1,206</u>	<u>1,150</u>	<u>1,635</u>	<u>1,647</u>

Exports of Carpets and Rugs from India.

	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>	<i>Th. lb.</i>
To United Kingdom ..	1,532	3,958	2,113	2,134
United States.. ..	103	751	907	870
Other countries ..	140	1,001	856	842
Total ..	<u>1,775</u>	<u>5,710</u>	<u>3,876</u>	<u>3,846</u>

So far as imports are concerned, the main features shown by the above figures are discussed on page 226.

Features of the export trade in carpets and rugs are the smaller proportion of shipments to the United Kingdom, and the large increase in shipments to the United States and elsewhere. It is probable that goods which would ordinarily before the war have come to this country for distribution are to an increased extent shipped direct to the consuming countries.

Japan.

A considerable wool textile industry has grown up, largely since 1913. Following the establishment by the Government many years ago of an experimental plant to weave heavy cloths for uniforms, several privately controlled factories were set up for the same purpose and production extended gradually before the war to other sections. At the present time the principal product is a light woollen fabric generally described as muslin from the nature of the weave. The retained imports of raw wool increased from an average of 10 million lbs. in the years just before the war to 59 million lbs. on the average of 1921-26; and there has been a marked expansion also in imports of tops (from 3,500 metric tons to about 5,000, mainly from the United Kingdom and Australia) and yarns (from 2,300 to 7,500 metric tons, mainly from Germany, the United Kingdom, and France).

The expansion of demand, consequent upon the increasing adoption of European clothing, has outstripped the growth of the home output of manufactured goods, and consequently imports have risen in recent years. The British export statistics suggest that flannels and delaines are an exception, since the quantity sent to Japan fell from some 587,000 square yards in 1909-13 to 42,500 square yards in 1926. Japanese goods are, to some extent, exported to China, where the use of European clothing is also expanding.

Being concentrated in and around Tokyo, the Japanese mills suffered severely from the earthquake of September, 1923, seven out of eighteen important mills being damaged or destroyed. The damage has, however, been repaired, and at the end of 1924 there was said to be more machinery (particularly combing machinery) in the country than before the disaster. The machinery at the latter date included 500,000 woollen mule spindles, 410,000 worsted spindles (60,000 of the type used in Bradford and 350,000 mule spindles as used in France) and 500 combs, 80 of the type used in Bradford and 420 continental.

Imports and exports in 1909-13 and in 1924, 1925 and 1926 were as follows :—

	1909-13.	1924.	1925.	1926.
	<i>Th.</i>	<i>Th.</i>	<i>Th.</i>	<i>Th.</i>
	<i>sq. yd.</i>	<i>sq. yd.</i>	<i>sq. yd.</i>	<i>sq. yd.</i>
<i>Imports—</i>				
Tissues :				
Returned by quantity throughout	12,396	35,513	26,193	14,763
	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>
Value thereof	9,326	59,342	56,704	28,128
Returned by value only	2,484	2,305	778	1,096
Total value of tissues	11,810	61,647	57,482	29,224
<i>Exports—</i>				
Tissues :				
Mousseline of wool	619	1,659	2,650	2,117
	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>
Value thereof	203	1,592	2,739	2,063
Other tissues returned by value only	289	795	959	1,069
Total value of tissues	492	2,387	3,698	3,132

The value of the yen at par of exchange is 2s. 0½d., but the currency has been depreciated since the war, and the average value of the yen was 22·44d. in 1924, 20·41d. in 1925 and 23·30d. in 1926.

Imports of tissues are further analysed according to sources in the following table :—

	1909-13.	1924.	1925.	1926.
	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>	<i>Th. yen.</i>
<i>Tissues</i>	11,810	61,647	57,482	29,224
From United Kingdom	7,849	58,987	53,911	25,979
Germany	2,644	1,164	1,305	2,017
France	304	684	1,414	696

Comments on these figures will be found on page 227.

Argentina.

A small wool textile industry has existed for a good many years, and this industry in common with others was stimulated by the war. Nevertheless, the local industry produces only a small part of the requirements, its output being mainly heavy cashmeres for men's and women's suitings, uniform cloths for the army, navy and police, and blankets. The industry is protected by a tariff, which, reckoned on an *ad valorem* basis, was in 1926 somewhat lower than before the war.

Imports of some of the principal items analysed by sources are shown below for 1909-13 (average) 1924, 1925 and 1926; and comments on the figures will be found on page 228.

	In Metric Tons.			
	1909-13. Average.	1924.	1925.	1926.
<i>Woollen and Worsted Yarns</i> (<i>pure and mixed</i>)—				
From United Kingdom	97	18	38	30
Germany	121	66	66	53
Belgium	156	267	379	256
France	136	132	168	271
Italy	234	228	308	278
Other countries ..	41	74	103	106
Total ..	785	785	1,062	994
<i>Woollen and Worsted Cloths</i> (<i>pure and mixed</i>)—				
From United Kingdom	2,693	2,227	2,106	2,117
Germany	743	200	205	276
Belgium	141	195	198	243
France	454	755	683	867
Italy	149	146	244	307
Spain	34	207	199	86
Other countries ..	17	134	100	93
Total ..	4,231	3,864	3,735	3,989
<i>Pile Tissues (including Pile</i> <i>Carpets)</i> —				
From United Kingdom	419	264	227	245
Germany	120	55	44	66
France	97	44	48	58
Other countries ..	56	36	28	68
Total ..	692	399	347	437

British trade is said to be predominant in men's suitings, etc., but ladies' dress goods are largely obtained from France and Germany.

APPENDIX 3.

MISCELLANEOUS STATISTICS.

TABLE 1.

Geographical distribution of the Persons engaged in the Wool Textile Industry in Great Britain according to the Census of 1921.

(a) *Woollen and Worsted.*

	Woollen Manufacture.			Worsted Manufacture.			Woollen and Worsted Manufacture.		
	Males	Females	Total.	Males.	Females	Total.	Males.	Females	Total.
England and Wales . . .	59,251	58,976	118,227	46,754	72,354	119,108	106,005	131,330	237,335
Scotland	8,806	12,125	20,931	378	1,050	1,428	9,182	13,175	22,357
Great Britain . . .	68,057	71,101	139,158	47,130	73,404	120,534	115,187	144,505	259,692
Of which :									
West Riding and City of York ..	46,924	47,654	94,578	44,056	68,320	112,376	90,980	115,974	206,954
Lancashire	4,770	3,687	8,457	133	187	320	4,903	3,874	8,777
Somersetshire, Gloucestershire and Wilts ..	2,649	3,077	5,726	18	13	31	2,667	3,090	5,757
Leicestershire ..	200	286	486	932	1,763	2,695	1,132	2,049	3,181
Oxfordshire ..	585	549	1,134	16	8	19	601	552	1,153
Peebles	1,048	1,050	2,098	11	4	15	1,069	1,054	2,113
Roxburgh	1,069	989	2,058	26	13	39	1,095	1,002	2,097
Selkirk	2,435	2,448	4,883	1	—	1	2,436	2,448	4,884

(b) *Carpets and Rugs.*

	Males.	Females.	Total.
England and Wales	7,794	9,275	17,069
Scotland	2,134	4,422	6,556
Great Britain.. ..	9,928	13,697	23,625
Of which—			
Worcestershire (including Kidderminster)	3,232	3,713	6,945
West Riding and City of York ..	3,097	3,870	6,967
Glasgow	872	2,045	2,917

TABLE 2.

*Number of Persons in the Woollen and Worsted Industry in Great Britain
(excluding carpets and rugs), 1851-1921.*

Year.				Males.	Females.	Total.
1851	..	..	..	141,500	112,500	254,000
1861	..	..	..	122,000	113,000	235,000
1871	..	..	..	123,500	139,500	263,000
1881	..	..	..	111,000	141,000	252,000
1891	..	..	..	121,500	153,500	275,000
1901	..	..	..	97,000	138,000	235,000
1911	..	..	..	105,500	142,500	248,000
1911	..	..	..	118,000	143,000	261,000
1921	..	..	..	115,000	145,000	260,000

In the above table the figures for 1851, 1861 and 1871 are estimates. The classification adopted in the censuses for those years was somewhat wider than in the subsequent censuses prior to 1921, and the figures shown in the table have been obtained by reducing the census figures proportionally to the reduction effected through the new classification adopted for 1881.

For the year 1911 two sets of figures are shown, the first being comparable with the figures for the earlier years, and the second being comparable with the figures for 1921, in which year a further new classification was employed.

The inclusion of Ireland would raise the figures given in the table by 2 or 3 per cent.

For particulars as to numbers insured under the Unemployment Insurance Acts in the years 1923-27, *see* page 307.

TABLE 3.

Number of persons employed in Woollen and Worsted Factories in the United Kingdom, 1839-1907.

(Based on official returns obtained from textile factories.)

Year.	Males.	Females.	Total.
1839	41,952	44,459	86,411
1847	59,209	66,375	125,584
1850	71,882	82,298	154,180
1856	75,606	91,279	166,885
1862	81,255	91,791	173,046
1870	108,143*	130,360*	238,503*
1874	125,338	154,795	280,133
1878	116,156	154,192	270,348
1885	124,602	157,653	282,255
1890	131,543	170,013	301,556
1896	121,451	162,990	284,441
1898	106,207	150,218	256,425
1901	106,598	153,311	259,909
1904	108,998	152,803	261,801
1907	108,838	152,354	261,192

* Figures for 1870 and subsequent years include numbers employed in shoddy factories. These comprised 1,906 males and 1,910 females in 1870.

The figures for woollen and worsted factories separately so far as they are available are as follows :—

Woollen Factories.				Worsted Factories.		
	Males.	Females.	Total.	Males.	Females.	Total.
1839 ..	33,259	21,520	54,779	8,693	22,939	31,632
1847 ..	43,913	29,493	73,406	15,296	36,882	52,178
1850 ..	44,765	29,678	74,443	27,117	52,620	79,737
1856 ..	45,583	33,508	79,091	30,023	57,771	87,794
1862 ..	49,754	37,229	86,983	31,501	54,562	86,063
1870 ..	65,049*	63,897*	128,946*	43,094	66,463	109,557
1874 ..	68,288	69,748	138,036	57,050	85,047	142,097
1878 ..	66,443	72,980	139,423	49,713	81,212	130,925
1885 ..	69,277	74,748	144,025	55,325	82,905	138,230
1890 ..	72,292	80,940	153,232	59,251	89,073	148,324
1896 ..	65,781	76,210	141,991	55,670	86,780	142,450
1897 ..	60,258	70,051	130,311	51,018	84,415	135,433
1898 ..	58,080	67,650	125,730	48,127	82,568	130,695
1921† ..	68,057	71,101	139,158	47,130	73,404	120,534

* Including shoddy factories from 1870.

† Census figures for Great Britain.

TABLE 4.
Equipment of Woollen and Worsted Factories in the United Kingdom.

WOOL.

Year.	Carding Sets.	Combing Machines.	Woollen Spindles ('000's).			Worsted Spindles ('000's).			Total Woollen and Worsted Spindles ('000's).	Power Looms ('000's).		Total
			Spinning.	Doubling	Total.	Spinning.	Doubling.	Total.		In Woollen Factories.	In Worsted Factories.	
1850	..	..	—	—	1,595	—	—	876	2,471	9.4	32.6	42.0
1855	..	..	—	—	1,787	—	—	1,325	3,112	14.5	38.9	53.4
1862	..	..	—	—	2,183	—	—	1,289	3,472	21.8	43.0	64.8
1870	13,430	1,267	2,665*	162*	2,827*	1,621	310	2,131	4,568	50.8*	61.7	115.5*
1878	..	..	3,267	159	3,426	2,163	369	2,532	6,008	58.6	81.7	140.3
1885	..	..	3,421	328	3,749	2,067	456	2,523	6,302	59.0	79.4	148.4
1890	..	..	3,148	233	3,381	2,227	537	2,764	6,145	60.0	87.9	147.9
..	..	..	3,202	300	3,502	2,403	669	3,072	6,574	64.1	67.4	131.5
1904	6,700	2,924	2,688	214	2,902	2,988	845	3,783	6,685	51.8	52.7	104.5
1913	6,145	2,952	3,061	257†	3,318†	3,610	1,065†	4,705†	8,023	—	—	114.6

* Figures for 1870 and subsequent years include equipment of shoddy factories, which comprised in 1870 some 188,200 spinning spindles, 800 doubling spindles, and 2,700 power looms.

† The 1,352 doubling spindles in the industry have been distributed between woollen and worsted on the basis of the relation between spinning and doubling spindles prevailing in 1904.

NOTE.—A general note on the above Table is printed overleaf.

Note to Table 4.

In examining this table care must be taken to avoid rigid conclusions as to the productive capacity of the wool textile industry based on comparisons of the quantities of units of machinery in any two years cited; for example, there can be no comparison between the carding machine of 1870 and that of 1918. There were probably 25 per cent. more threads on the 6,145 carding machine of 1918 than there were on the 13,430 carding machines of 1870.

In the case of spinning spindles in woollen factories, an increased output per unit has been brought about by longer mules, larger bobbins and, to a certain extent, more "draws" per minute. It is, however, in the case of the looms that the greatest care has to be taken. The great reduction which has taken place in the number of looms is in narrow looms, particularly those which before and up to 1904 were devoted to the production of dress goods. The following classification of looms in 1904 and 1918 indicates that the reduction in the number of narrow looms between those two dates was accompanied by an increase in the number of those of greatest width.

Comparison of Looms, 1904 and 1918.

1904.		1918.	
<i>Reed space.</i>	<i>Number.</i>	<i>Reed space.</i>	<i>Number.</i>
Up to 40"	9,456	Up to 36"	2,343
40"—60"	22,843	36"—63"	33,404
60" and over	72,215	63"—84"	35,182
		84" and over	43,711
	<hr/> 104,514		<hr/> 114,640

In addition to the increase in average width there has been an increase in the speed of the looms. In the Woollen Section, in 1878, the 50 pick loom as it was known, viz. a loom running at the rate of 50 picks per minute, was the standard type; ten years afterwards the 80 pick loom was rapidly taking the place of the slower 50 pick loom, and by 1904 a 100 pick loom had come sufficiently into use to necessitate special provisions for the amendment of the Huddersfield weaving scale. To-day the 100 pick loom is the characteristic loom of the Yorkshire tweed trade. This increase of speed of looms has also taken place to some extent in the fine worsted trade; it is not, however, to be found in ordinary worsted weaving where the maximum speed of the loom was reached twenty or thirty years ago, and experiments have proved that no change is desirable or necessary.

TABLE 5.
Quantities of Wool, Mohair, Alpaca, Shoddy, etc., Imported into, Exported from, and Retained in the United Kingdom.
(Based upon Tables compiled by the Bradford Chamber of Commerce.)

Year.	Foreign and Colonial Wools				Home-grown Wools.				Estimated Quantity of Wool, etc., recovered from Shoddy, etc., retained.	Estimated Quantity of Wool, etc., consumed in United Kingdom.	Total Quantity of Wool, Mohair, Alpaca, etc., retained.	Population of Great Britain and Ireland.	Quantity of Wool Shoddy, etc., retained per head.
	Sheep's and Lamb's Wool Imported.	Mohair, Alpaca and other kinds Imported.	Re-exports of Wool, Mohair, Alpaca, etc.	Balances retained.	Total Clip (Estimated).	Exports of British Wool and Imported wool scoured in U.K.		Balance retained.					
						Mills. of lbs.	Mills. of lbs.						
1775-76 (average) ..	2-0	—	—	2-0	80	—	80-0	82-0	—	82-0	13-0	6-81	
1776-77 (average) ..	2-5	—	—	2-5	90	—	90-0	92-5	—	92-5	14-5	6-83	
1800-19 (average) ..	10-0	—	—	10-0	100	—	100-0	110-0	—	110-0	18-5	5-98	
1820-24 (average) ..	25-0	—	—	25-0	110	—	110-0	135-0	—	135-0	22-0	5-98	
1825-29 (average) ..	29-4	—	—	29-9	115	—	114-4	143-8	—	143-8	23-2	6-81	
1830-34 (average) ..	36-2	—	0-5	36-7	120	0-6	116-4	151-1	—	151-1	25-5	6-71	
1835-39 (average) ..	53-0	—	1-0	52-5	120	4-4	115-4	167-9	—	167-9	26-0	6-84	
1840-44 (average) ..	55-0	—	2-0	54-0	125	5-0	120-0	174-0	—	174-0	27-8	6-83	
1845-49 (average) ..	68-0	—	7-0	63-5	130	9-0	131-0	184-5	4	188-0	27-8	6-83	
1850-54 (average) ..	83-0	—	15-0	83-0	135	12-0	128-0	205-0	5	209-5	27-8	6-83	
1855-59 (average) ..	118-7	—	29-8	94-3	140	13-7	126-3	230-6	6	241-0	27-8	6-83	
1860-64 (average) ..	167-2	—	50-7	123-8	145	10-5	134-5	258-3	7	263-6	29-2	8-57	
1865-69 (average) ..	236-3	—	8-4	152-4	159	9-9	149-1	301-5	9	312-8	30-4	10-70	
1870-74 (average) ..	307-0	—	10-6	126-5	165-6	9-2	150-4	341-5	13-8	354-3	31-9	14-23	
1875-79 (average) ..	392-4	—	11-5	185-1	165-0	10-4	144-6	353-4	20-1	477-5	33-6	14-23	
1880-84 (average) ..	481-3	—	17-9	264-6	185-0	16-5	115-9	383-5	20-0	496-5	36-2	14-31	
1885-89 (average) ..	599-5	—	23-5	320-1	194-6	22-1	112-5	413-4	25-0	589-4	38-2	14-74	
1890-94 (average) ..	691-3	—	23-4	372-5	242-2	19-6	120-8	429-0	33-2	693-2	38-2	16-58	
1895-99 (average) ..	715-7	—	29-6	338-9	405-9	22-9	114-8	472-8	39-6	698-4	40-0	17-19	
1900-04 (average) ..	697-7	—	33-9	265-4	376-2	31-2	104-8	481-0	39-6	665-6	43-0	15-61	
1905-8 (average) ..	683-3	—	40-2	301-7	331-2	33-5	97-7	519-5	34-7	744-3	43-9	18-91	
1909-13 (average) ..	800-6	—	43-6	336-7	448-4	41-2	94-8	601-0	36-5	709-4	45-9	18-79	
1913-23 (average) ..	904-4	—	31-9	319-9	616-4	38-9	67-2	683-6	38-5	818-6	46-6	17-62	
1924-7 (average) ..	780-2	—	26-8	360-0	457-0	55-6	56-3	513-3	33-2	608-9	45-1	13-69	
1928-31 (average) ..	760-3	—	31-9	363-9	428-3	52-3	52-3	490-6	23-4	527-4	47-9	11-96	
1925-30 (average) ..	726-9	—	23-6	342-4	408-3	53-8	59-0	544-8	18-4	644-4	48-0	11-84	
1932-5 (average) ..	811-4	—	18-6	345-4	484-8	54-4	60-2	563-4	22-5	667-6	48-2	13-64	
1937-40 (average) ..	822-5	—	32-8	348-4	506-9	66-0	66-5	563-4	26-3	661-3	48-4	13-66	

TABLE 6.
Overseas Trade of the United Kingdom in Woollen and Worsted Goods.

Annual Averages for Years.	Exports of Wool Tops.		Imports of Yarns		Exports of Yarns.			Exports of Woollen Tissues.		Exports of Worsted Tissues.		Exports of Carpets.		Exports of Flannels.		Exports of Blankets.		Imports of Cloths, Stuffs, Flannels and Delaines		Total value of manufactures other than flocks, waste tops and yarns, including Wool Hosiery.	
	Th. lbs.	Not re- pared ably	Woollen.	Worsted and other.	Woollen.	Worsted.	Alpaca, Mohair and other, hair or wool.	Exports of Woollen Tissues.		Exports of Worsted Tissues.		Exports of Carpets.		Exports of Flannels.		Exports of Blankets.		Th. linear yds.	Th. linear yds.	£1,000.	£1,000.
								Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.	Th. lbs.				
1853-4	785		14,849		143,622		323,970		3,325		1,484		1,801		1,838		9,846		9,846		
1855-6	901		23,864		149,528		252,763		4,044		1,607		1,301		1,081		9,951		9,951		
1860-4	3,202		29,447		176,962		243,803		4,294		1,890		1,238		1,620		14,069		14,069		
1865-9	7,371		35,202		255,483		85,780		7,418		1,235		1,235		2,248		20,938		20,938		
1870-4	12,439		1,051		38,663		50,224		10,255		1,348		1,348		3,972		25,876		25,876		
1875-9	12,849		586		30,238		50,224		6,718		1,301		1,301		5,207		18,039		18,039		
1880-4	13,939		1,863		30,295		50,224		10,520		1,238		1,238		6,540		19,523		19,523		
1885-9	16,355		2,097		41,860		50,224		11,943		1,437		1,437		8,848		20,100		20,100		
1890-4	16,238		1,212		44,860		50,224		13,211		1,315		1,315		9,780		17,437		17,437		
1895-9	19,373		1,080		59,488		50,224		9,387		1,180		1,180		10,447		16,494		16,494		
1900-4	22,714		1,571		52,940		50,224		7,922		1,094		1,094		9,476		15,808		15,808		
1905-8	26,353		2,250		51,235		50,224		8,243		954		954		10,447		15,808		15,808		
1909-13	28,522		4,670		57,184		50,224		8,211		972		972		8,578		20,372		20,372		
1920	23,770		6,377		24,639		50,224		8,757†		972		972		8,578		20,372		20,372		
1921	34,680		5,993		23,464		140,425*		6,914		902		902		8,094		119,548		119,548		
1922	15,168		9,702		42,913		91,193		4,385		681		681		5,481		44,339		44,339		
1923	15,159		9,219		34,922		91,193		5,814		701		701		5,969		47,544		47,544		
1924	38,995		9,219		34,922		111,417		7,065		1,309		1,309		7,740		51,965		51,965		
1925	41,129		8,300		45,551		123,555		7,246		2,146		2,146		7,740		51,965		51,965		
1926	32,040		5,971		38,766		123,555		8,243		2,146		2,146		7,740		51,965		51,965		
1927	38,622		5,971		31,808		98,131		8,243		2,146		2,146		7,740		51,965		51,965		
1928	15,978		1,485		10,154		98,131		8,243		2,146		2,146		7,740		51,965		51,965		
1929	1,6038		6,539		45,316		98,131		8,243		2,146		2,146		7,740		51,965		51,965		

* For 1920 and subsequent years the Trade Accounts show square yardage. In estimating the linear yardage, it has been assumed that 4 square yards of woollen cloth = 3 linear yards; 5 square yards of worsted cloth = 4 linear yards; 7 square yards of flannel = 10 linear yards.

† Figures for 1880 and subsequent years exclude Damasks, Tapestry and Mohair Finishes, previously included with Worsted tissues. Exports of these averaged 194 thousand yards per annum in 1890-4.

‡ Average for 1910-13. Figures for these and subsequent years are in square yards and relate to carpets and carpet rugs.

§ Exports of "Tissues wholly or mainly of Mohair, Alpaca and Cashmere (not being pile fabrics)" were included with "Woollen Tissues" or "Worsted Tissues" prior to 1925.

Table 7.

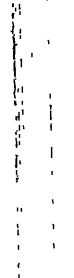
Classification of British Exports of Woollen and Worsted Tissues, 1890-1913.

	1890-94. Average	1895-99. Average	1900-04. Average	1905-08. Average	1909-13. Average
<i>Woollen Tissues—</i> Thousands of Linear Yards.					
Heavy Broad, all wool ..	8,582	9,328	10,736	17,673	22,418
„ „ mixed ..	14,093	15,645	14,706	19,223	25,964
„ Narrow, all wool	1,254	795	433	513	559
„ „ mixed ..	711	475	551	431	539
Light Broad, all wool ..	6,369	6,900	6,413	9,308	11,100
„ „ mixed ..	8,771	11,430	10,602	17,858	22,106
„ Narrow, all wool	3,220	3,008	3,045	3,794	4,611
„ „ mixed ..	7,224	5,476	5,589	9,399	8,324
Total ..	50,224	53,057	52,075	78,197	95,621
<i>Worsted Tissues—</i>					
Coatings, Broad, all wool	14,532	16,036	9,543	11,886	14,715
„ „ mixed ..	4,423	4,779	6,330	6,281	7,656
„ Narrow, all wool	2,704	1,256	636	643	442
„ „ mixed ..	3,872	1,614	1,106	1,235	763
Stuffs, etc., all wool ..	14,821	15,130	11,458	9,619	8,190
„ „ mixed ..	99,677	86,883	72,751	65,072	46,958
Total ..	140,029	125,698	101,824	94,736	78,724

The figures may be further analysed as follows :—

	1890-94. Average	1895-99. Average	1900-04. Average	1905-08. Average	1909-13. Average
<i>Woollen Tissues—</i> Thousands of Linear Yards.					
Heavy	24,640	26,243	26,426	37,840	49,480
Light	25,584	26,814	25,649	40,357	46,141
Broad	37,815	43,303	42,457	64,060	81,588
Narrow	12,409	9,754	9,618	14,137	14,033
All wool	19,425	20,031	20,627	31,286	38,688
Mixed	30,799	33,026	31,448	46,911	56,933
<i>Worsted Coatings—</i>					
Broad	18,955	20,815	15,873	18,167	22,371
Narrow	6,576	2,870	1,742	1,878	1,205
All wool	17,236	17,292	10,179	12,529	15,157
Mixed	8,295	6,393	7,436	7,516	8,419

As regards both woollen and worsted tissues, the figures show a change in favour of broad cloths against narrow cloths. In the case of worsted tissues an outstanding feature was an almost continuous decline in the export of stuffs, both all wool and mixed, but particularly the latter. The export trade in worsted coatings, etc., on the other hand, was much better maintained.



CHAPTER III.

THE ARTIFICIAL SILK INDUSTRY.

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THE ARTIFICIAL SILK INDUSTRY.

The main object of this chapter is to describe briefly the development of the artificial silk* industry, i.e. the manufacture of the threads, filaments, or fibres from which artificial silk yarn is made. Some reference will also be made to the production of tissues and other goods made wholly or partly from artificial silk, and to international trade in artificial silk and manufactures thereof.

The development of the industry.

The manufacture of artificial silk consists essentially in a succession of chemical processes applied to cellulose, a substance constituting the chief part of the solid framework of plants. The cellulose, derived generally from wood pulp or cotton, is first converted into a viscous pulp. The pulp is then squeezed through small nozzles and emerges in the form of continuous filaments which (after further chemical treatment in some of the alternative processes employed) can be converted into yarn by a "doubling" process. As the result of more recent developments, there is also a considerable production of artificial silk in short lengths, known as "staple fibre," that can be spun like cotton or wool. In some cases the manufacturer of artificial silk also carries on the production of yarn, and in other cases the filaments, threads or fibres of artificial silk are sold and are converted into yarn by firms in the silk, cotton or other textile industries. For statistical purposes, "artificial silk" generally includes not only threads, filaments and fibre, but also yarn.

Four different systems are used for producing artificial silk on a commercial scale (viscose, nitro-cellulose or Chardonnet, acetate, and cuprammonium). These differ to some extent in the raw materials used and also in the chemical processes employed; and their respective products differ from each other in certain respects (strength, fineness, lustre, permeability to moisture, etc.). By far the most widely used process of making artificial silk is the viscose process, which is estimated to account for at least 80 per cent. of world production. The raw material employed in this process is sulphite wood pulp usually made from pine and spruce logs.

The artificial silk industry is of very recent origin. Only one of the four principal processes of manufacture (the nitro-cellulose or "Chardonnet" process) dates back, so far as commercial production is concerned, before the end of the nineteenth century, though the

* The name "artificial silk" is not universally accepted, and considerable discussion has taken place as to the adoption of a name which would distinguish goods made of artificial silk more clearly from silk goods. In the United States, the term "rayon" is generally used instead of "artificial silk."

period of experiment and research extends back considerably further. French research contributed largely to the early development of the industry and it was in France that the industry was first operated on a commercial scale ; but valuable work was done also in the United Kingdom, Germany and the United States, and some of the important steps in the development (particularly of the important viscose process) were due to Englishmen.

Although the industry had been developed to some extent in several countries (chiefly the United Kingdom, Germany and Belgium, in addition to France) before the war, the general condition of the textile market at that time and certain defects of the new fibre, such as its inflammability and its liability to damage by moisture, were against a rapid increase in demand. Since the end of the war, however, conditions have changed and it is in the post-war years that the great expansion of the industry has taken place. Successive technical victories over pre-war defects, the attractiveness of products made with artificial silk and the greatly increased demand among all classes of the population for elegance in articles of wearing apparel, combined to produce a continual increase in the consumption of goods made partly or wholly of artificial silk.* At the same time, the adequacy of future supplies of the natural fibres such as cotton and wool was being questioned, while their prices had reached unprecedented heights and had fluctuated considerably. The price of artificial silk, on the other hand, fell substantially (*see* Table 1, p. 304), and seemed much less likely to fluctuate ; while large profits were being made by producers. Hence everything favoured a rapid expansion in production, capital was attracted in great volume to the industry both for the enlargement of existing enterprises and for the establishment of new companies,† and the world output of artificial silk, which had increased from 11,000 to 35,000 metric tons between 1913 and 1922, grew to about 85,000 metric tons in 1925, and about 100,000 metric tons in 1926‡ (*see* Table 2, pp. 305-6). The output in that year, though about twice that of natural silk, was still only between 1 per cent. and 2 per cent. of that of cotton, and between 6 per cent. and 7 per cent. of that of wool ; but the output

* No doubt the vogue of the short skirt has had considerable influence on the fortunes of the artificial silk industry in giving rise to a demand for stockings of more attractive texture and colours than had hitherto prevailed—a demand which artificial silk was well adapted to meet.

† A list of artificial silk manufacturing companies in Great Britain, given in the Artificial Silk Number of the "Times Trade Supplement" (April, 1927) contains the names of 17 companies with a total capital (excluding one not stated) of £31,561,000. Of this total, £20,000,000 was accounted for by Messrs. Courtaulds Ltd. (*see* p. 296), which was founded before the war. Of the remaining companies one (British Celanese Ltd., with capital of £5,400,000) was founded in 1918, six between 1920 and 1924, eight (with aggregate capital of £3,610,000) in the single year 1925, and one in 1927.

‡ According to trade estimates, world production showed a further increase in 1927.

capacity of the industry has been greatly increased during the last few years, and provided demand also increases, a considerable expansion of the industry seems certain. The number of countries in which production is being undertaken is growing, both in Europe and in the East (e.g. Japan). The question whether the development of the production of artificial silk will diminish the demand for raw cotton (especially Egyptian cotton), raw wool (especially merino), or natural silk is one which cannot yet be answered with any certainty, though up to the present it does not seem to have had this effect. It is clear that, as a textile raw material, artificial silk is in a different position from such materials as cotton, wool and silk, the supplies and prices of which are liable to serious fluctuations as the result of such causes as insect pests or phenomena beyond human control (e.g. weather, disease, etc.). As artificial silk is produced mainly from a material (timber) of which large supplies are already in existence in many parts of the world, it follows that (subject ultimately to the necessary provision for preventing deforestation) its output can be expanded to any given extent by the erection of the necessary plant; and its price, being dependent to a very large extent on the cost of factory processes, is much more subject to human control than that of the direct products of nature. Nor is the production of artificial silk necessarily confined to countries possessing a particular type of climate or other natural resources. It has in fact been developed chiefly in industrial countries which, besides being favourably situated for obtaining supplies of raw material, possess a well-developed chemical industry and a supply of trained chemists and other skilled employees.

The Utilisation of Artificial Silk.

Artificial silk differs from natural textile fibres in being a continuous smooth filament without scales or protruding hairs. It is not so strong as cotton; and, while it is extensible, it is not elastic like wool. When wet it loses a proportion of its tensile strength and is thus much more liable than cotton or wool to damage in sizing, bleaching, dyeing and washing. Among the principal advantages of artificial silk are the softness and lustre of the fabrics made from it. Owing to the smoothness of the filament, cloth woven from it will not readily catch dirt, and it can be used for loose and open weaves. Moreover, artificial silk has peculiar dyeing qualities, and when it is used in combination with other textile fibres, or when more than one kind of artificial silk (e.g. viscose with acetate) goes to the same fabric, distinguished effects of cross-dyeing can be produced.

Artificial silk can be used, either alone or in combination with other textile materials, for the production of a large variety of manufactured articles, such as hosiery and dress fabrics, linings, shirtings, furnishing fabrics, velvet and plush, underwear, outer

garments, laces, ribbons and braids. While there is a considerable production of goods made entirely of artificial silk, by far the greater part of the artificial silk produced is used in combination with other materials, notably cotton, silk and wool. The production of goods made wholly of artificial silk is undertaken (1) by the makers of the artificial silk itself; (2) by manufacturers of silk goods, whose machinery is, to a large extent, suitable for dealing with artificial silk,* and (3) by an increasing number of cotton manufacturers. The hosiery and knit goods industries have also found a large market for the sale of goods made from artificial silk, though the demand for some of the products is largely influenced by fashion and considerable fluctuations have taken place in consequence.

In combination with other textile materials, artificial silk may be used in the form of yarn which is worked up with yarns of other material, or else artificial silk in the form of staple fibre may be spun with one of the natural fibres (cotton or wool) into mixed yarn. The artificial silk industry has thus placed at the disposal of the cotton and wool textile industries and the hosiery and knit goods industries a new material, the value of which has already been proved, and there is little doubt that the use of artificial silk will extend to the linen industry, though up to the present the combination of linen and artificial silk has encountered serious difficulties owing to the different degrees of shrinkage which the two materials undergo in the process of bleaching. By the use of artificial silk the older textile industries have been enabled to produce new kinds of fabrics and other manufactures, as well as novel designs and original forms of ornamentation; and all such developments are obviously matters of great importance in assisting these industries to extend the market for their products.

Some particulars are available showing how the total quantities of artificial silk used in the United States in each year from 1912-26 were distributed among the various using industries. A selection from the figures is given in Table 3, page 306. It will be seen that in 1913 40 per cent. of the total quantity of artificial silk was used in the hosiery industry; 12 per cent. went into cotton goods; 10 per cent. silk; 5 per cent. woollen and 5 per cent. knitted articles. The percentage for hosiery reached its maximum in 1915 when the hosiery industry consumed 65 per cent. of the total. Since the war the percentage has varied between 22 and 28. The percentage used by the knitted goods industry rose to a maximum of 29 in 1921, but

* According to the final report (dated December, 1923) of the Board of Trade Committee on the Lace, Embroidery and Silk Industries, the use of artificial silk has become widespread throughout the silk industry, the same workpeople handling both pure and artificial silk. As an indication of the growing use of artificial silk in the silk industry, statistics obtained by the Committee showed that the number of workpeople employed by six firms of throwsters on artificial silk in 1923 was nearly five times the number employed by them in 1913.

fell sharply after 1923. The percentage of the total used in cotton goods has been rising steadily since the war and exceeded 20 per cent. in both 1925 and 1926. The percentage used in the wool textile industry has been almost negligible since the war, though it is stated that, as the artificial silk used in the wool textile industry is of very fine "denier,"* the amount (length) used is in reality greater than is indicated by percentages based on weight. For silk goods the percentage since the war has been between 11 and 18.

In considering these figures it is, of course, necessary to take account of the fact that the total consumption of artificial silk has been rapidly increasing in the United States, so that a decline in the percentage figure does not necessarily mean a decline in the actual amount used.

Figures showing the distribution of artificial silk among the using industries in Germany were given in the "Times Trade Supplement," April, 1927. They were, cotton 26 per cent., knitting industries 46 per cent., silk 16 per cent., miscellaneous 12 per cent.

As regards price, it will be seen from Table 1, page 304, that artificial silk yarn is intermediate between the corresponding qualities of Egyptian mercerised cotton yarn and botany worsted yarn, all three being far below the price of natural silk yarn. It will also be seen that artificial silk yarn is the only one of the three kinds which is cheaper than in 1913.

World Production and Trade.

Production on a commercial scale dates from 1896, when a few hundred tons were produced. Table 2, pp. 305-6, shows the estimated output of the various countries in 1913, 1922-5 and (from a different authority) 1925-6, both in amount and as a percentage of world output. The rapid growth in production since the war will be noted. In comparing one country with another or one year with another, it must be remembered that a given weight of artificial silk may represent very different lengths of the material according to its fineness. Hence an increase in production of finer "denier" material would be under-stated in the weight statistics given in the table.

By 1913 the lead in production had passed from France, where the industry began, to Germany and Great Britain, and in 1922 it was gained by the United States, which has held it ever since. A most notable feature is the rapid rise in a few years of the Italian production to second place.

The same Table also shows the estimated world consumption of artificial silk in 1925 and 1926, and a comparison of these with the

* The "denier" indicates the weight (in milligrams) of 10 metres of silk. For example, if silk is of 150 denier, 10 metres of it will weigh 150 milligrams.

figures of production in the various countries indicates the existence of a considerable international trade. This trade is in fact much more extensive than the figures in question suggest, for even those countries which produce as much as they consume import considerable quantities (at the same time exporting their own produce), while many countries which need to import nevertheless also export. The explanation no doubt lies, at least partly, in the existence of the several varieties and qualities of artificial silk. The table on page 298 shows the imports and exports of certain countries in 1913 and 1923-26. The countries which on balance export substantial quantities of artificial silk are Italy, the Netherlands, and (in the last year or two) Belgium, Great Britain and Switzerland. The exports from Germany are also large, but imports are still larger. The exports from the United States are negligible.

The chief importing countries in 1926 were the United States and Germany. Both these countries import from all the principal producing and exporting countries. The largest imports into the United States in 1926 came from Italy, Germany, the Netherlands, and Switzerland. The largest imports into Germany in 1926 came from Italy.

Detailed particulars of the destinations of the exports from the principal exporting countries, and some information as to the competitive position in certain importing countries is given in Appendix I, pp. 298-303.

The development of the artificial silk industry has generally been accompanied in the producing countries by the imposition or increase of import duties on the commodity. In the United States the duty is 45 per cent. *ad valorem*; the specific duties in France, Poland and Japan have been maintained at a high level; those in Germany, although they have been increased since the war, are at a considerably lower level. In Italy, Belgium, Switzerland, Austria and Czechoslovakia the former duty-free admission has been replaced by comparatively low duties (imposed since 1921). In the Netherlands artificial silk is duty free. Reference is made on p. 288 to the duties (Customs and Excise) imposed in the United Kingdom in the middle of 1925.

Production and Trade of Great Britain.

Production.

Filaments, threads and yarn.—According to the Preliminary Report of the Third Census of Production, the output of artificial silk in Great Britain during 1924 by firms whose returns were made on schedules for the silk trades was 24,203,000 lb., of a selling value of £8,249,000, together with 456,000 lb. of artificial silk waste, valued at £23,000. The total production of artificial silk in 1924, if the amount used by the makers as material in the manufacture of more finished goods is included, amounted to 25,525,000 lb.

In 1907, when the first Census of Production was taken, the output of artificial silk was so small that it was not separately distinguished. Thus the artificial silk industry has practically arisen in this country entirely in the last twenty years.

Exports of artificial silk yarn, threads and filaments from the United Kingdom during 1924 amounted to 6,351,000 lb. and net imports to 10,151,000 lb., or about 25 and 40 per cent. respectively of the quantity produced in that year in Great Britain. The total quantity of artificial silk available for consumption in the United Kingdom was thus 29,325,000 lb., rather over 65 per cent. being of home production and nearly 35 per cent. imported.

Since 1st July, 1925, when an excise duty was imposed, particulars are available as to the quantities of artificial silk charged with duty, and these quantities (which are shown below) should be a reliable measure of the country's output.

	<i>Singles, yarn and straw.</i> lb.	<i>Waste.</i> lb.
(Half year) 1st July to 31st Dec., 1925 ..	13,783,292	311,291
(Complete year) 1st Jan. to 31st Dec., 1926	25,487,309	826,984
(" ") 1st Jan. to 31st Dec., 1927	38,802,566	1,344,850

Considering imports and exports of both home-produced and foreign artificial silk, there was in 1925 an import balance of 4,421,000 lb., and in 1926 and 1927 export balances of 4,039,000 lb. and 5,769,000 lb. respectively. Assuming home production in 1925 to have been at about the same rate as in 1924 the figures indicate that the total amount of artificial silk available for consumption in this country in 1925 was about 30 million pounds, as compared with about 21½ million pounds in 1926 and 33 million pounds in 1927. It appears probable, however, that the figure for 1925 was swollen through abnormally large imports in the first half of the year, prior to the imposition of the import duty, and that in consequence large stocks were carried over from 1925 to 1926.

Manufactures.—It is much more difficult to obtain particulars of the total output of manufactures composed entirely or partially of artificial silk. The Preliminary Report of the 1924 Census of Production showed an output of such manufactures valued at £2,171,000 in the year 1924 by firms whose returns were made on schedules for the silk trades. This output was made up as follows :—

Piece goods of artificial silk, or of artificial silk mixed with textile materials other than silk :—	<i>Selling Value.</i>
Returned by weight, 818,000 lb.	£602,000
Returned by square yardage, 6,923,000 sq. yds.	£1,226,000
Quantity not stated	£83,000
Total of piece goods of artificial silk, or mixtures . .	£1,911,000
Manufactures of artificial silk other than piece goods (except articles of clothing)	£260,000

It is clear that the output shown above accounts for only a small fraction of the quantity of artificial silk yarn available for manufacture in 1924, and therefore that it represents only a small part of the total output of manufactures (piece goods and other products) in which artificial silk enters as a constituent. The Census of Production for the silk trades showed an output in 1924 of "articles of clothing of silk or of artificial silk" valued at £2,549,000, and a substantial part of this must have consisted of goods containing artificial silk. In addition, large quantities of artificial silk were no doubt used in the manufacture of hosiery and knit goods and in the production of piece goods or other tissues in which some other textile fibre (cotton or wool) predominated, and which would therefore be included in the returns under the Census of Production for the other textile trades. No detailed figures are available for this country as to the quantities of artificial silk used in the hosiery or knit goods industry, or in the cotton and wool textile industries,* though it will be seen later (pp. 638-9) that the export of fabrics made from cotton or wool mixed with artificial silk is a trade of rapidly growing importance. A note in Barclay's Bank "Monthly Review" for October, 1927, stated that "a feature of interest has been the steady trade in fabrics made from cotton and artificial silk, some makers of which are now booked up until the early months of next year."

A comparison of the Census of Production returns for 1907 and 1924 indicates that the development of the artificial silk industry has been accompanied by a substantial decline in the output of pure silk goods and of silk mixtures in this country. It does not appear, however, considering the world as a whole, that the great increase during recent years in the output of artificial silk manufactures has been accompanied by any decline in the demand for manufactures of natural silk. The consumption of these is indeed stated to have increased with the gradual return to world stability and prosperity since the war.

Number of persons employed.—No definite information is available as to the number of persons engaged in the British artificial silk industry owing to the fact that practically all the official data as to employment relate to the silk industries combined.† According to the Census of Production Returns, the average number of persons employed during the year 1924 at the factories and workshops of the firms in Great Britain whose returns were made on schedules for the silk trades was 39,211 (of whom 25,263 were females), as compared with an estimated total of 34,500 persons in 1912 and 31,668

* According to an article in the Artificial Silk Number of the "Times Trade Supplement," Lancashire (apparently in 1926) took $8\frac{1}{2}$ million lb. of artificial silk, of which 7 million lb. were used by the cotton weaving trade.

† The population census of 1921 recorded 4,063 persons engaged in spinning artificial silk.

(21,781 females) in 1907. As the returns of production indicate a substantial decline since 1907 in the natural silk industry, it seems probable that a large proportion of the total number of persons recorded in 1924 owed their employment to artificial silk.* The estimated numbers of insured persons under the Unemployment Insurance Acts in the silk (including artificial silk) industry in Great Britain and Northern Ireland showed a steady increase from 37,300 in July, 1923, to 55,040 in July, 1927†, and it may probably be assumed that the increase was entirely due to the expansion in the artificial silk industry. These figures take no account of the numbers of persons employed in work on artificial silk in other industries (hosiery, knit-goods, cotton, wool, etc.). The artificial silk industry is situated mainly in the Midlands and Lancashire.

Power.—The Preliminary Report of the Third Census of Production for the Silk and Artificial Silk Trades shows that a remarkable increase took place between 1907 and 1924 in the amount of power available. It rose from a total of about 19,000 horse-power (or .6 per person employed) in 1907 to about 25,000 horse-power (or .7 per person employed) in 1912, and to about 54,000 horse-power (or 1.4 per person employed) in 1924. The fact that the increase occurred almost entirely between 1912 and 1924 is no doubt due to the development of the artificial silk industry.

Customs and Excise Duties.

Customs duties on imports of artificial silk and on manufactures composed of or containing artificial silk, together with Excise duties on home production, came into operation on 1st July, 1925.‡ The import duties are at the rate of 1s. per lb. for waste; 2s. for singles, yarn and straw; 3s. for double or twisted thread advanced beyond the stage of singles yarn; 3s. 6d. per lb. for tissues; together with *ad valorem* duties on made-up articles according to the ratio of the value of the artificial silk component to the aggregate of the values of all the components, the three divisions being—

- (1) Up to 5 per cent. artificial silk, a duty of 2 per cent. *ad valorem*.
- (2) Over 5 per cent. up to 20 per cent. artificial silk, a duty of 10 per cent. *ad valorem*.
- (3) Over 20 per cent. artificial silk, a duty of 33½ per cent. *ad valorem*.

* The average number of wage earners in the artificial silk industry of the United States in 1925 was 19,077. In the same year the number in Germany was estimated at 17,000. The number of workpeople in the Italian artificial silk industry was estimated (in the Report prepared for the International Economic Conference, 1927) at about 30,000, of whom two-thirds were women.

† See page 307.

‡ See "Factors in Industrial and Commercial Efficiency," pp. 400-1.

Imports of such goods from the British Empire pay only five-sixths of the rates specified, the "Imperial Preference" amounting to one-sixth of the full rates.

The excise duties are at the rate of 6*d.* per lb. for artificial silk waste, and 1*s.* per lb. for singles, yarn or straw.

Trade.

Imports and Exports.—While the compilation of statistics of overseas trade in artificial silk is not difficult, the collection of complete statistical information as to imports and exports of manufactured articles in which it is used is almost impossible. As pointed out above, artificial silk is used mainly, not for the purpose of producing goods of which it forms the sole material, but for the manufacture of tissues and other products in which it is mixed with other textile materials such as silk, cotton or wool. The enumeration of statistics relating to the imports and exports of such mixed goods presents considerable difficulties and has been attempted in this country only during the last year or two, nor is the enumeration yet complete. Hence while particulars are available as to the value of the total imports and the total exports of piece goods made wholly or partly of artificial silk for each year since the war, it is only since 1st July, 1925, that a separation can be made between the pure and the mixed goods, and that any statistics as to the weight of imports and exports are available; and it is only since 1st January, 1926, that any separate particulars can be given as to the quantities of goods made from artificial silk mixed with (1) cotton or (2) wool which have entered into the overseas trade of this country.

The only other category in respect of which figures are available is stockings and hose of artificial silk, or of which the chief value is artificial silk. The overseas trade in these articles has been shown in the trade returns since January, 1927. During the year 1927, exports amounted to 818,765 dozen pairs, valued at £669,461, and retained imports amounted to 434,551 dozen pairs, valued at £504,315. The following figures are also available for the previous three years, showing the trade in stockings and hose of textile materials other than cotton or wool :—

Year.	Retained Imports.	Exports.
	(Doz. pairs)	
1924	976,755	366,610
1925	1,585,085	558,612
1926	746,957	717,670

The re-exports during these three years were negligible.

It is probable that the figure of imports for 1925 was swollen through abnormally large imports in the first half of the year, prior to the imposition of the import duty on artificial silk manufactures.

British trade in artificial silk and manufactures thereof in recent years is summarised in the following tables* :—

Imports into and exports from the United Kingdom.

	1922	1923	1924	1925		1926	1927
				Jan.— June	July— Dec.		
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
<i>Imports.</i>							
Waste ..	990	19	19	48	6	31	15
Yarn, threads and filaments		1,999	3,272	3,018	117 (a)	462 (a)	590 (a)
Piece goods ..		1,291	1,754	1,845	1,032 (b)	3,591 (b)	5,360 (b)
Other manufactures (not including apparel or embroidery).		278	653	844	44	166	175
Imports : Total ..	2,559	4,425	5,534	5,755	1,199	4,250	6,140
Re-exported ..	290	385	658	440	265	484	479
Imports retained	2,269	4,040	4,876	5,315	934	3,766	5,661
<i>Exports.</i>							
Waste ..	1,320	44	50	26	22	17	13
Yarn, threads and filaments		2,081	2,232	1,358	937 (a)	1,689 (a)	1,809 (a)
Piece goods ..		892	1,110	1,565	1,259 (b)	5,018 (b)	5,186 (b)
Other manufactures (not including apparel or embroidery).		413	269	150	95	407	602
Exports : Total ..	2,625	3,504	4,360	3,099	2,313	7,131	7,610

(a) Described in the Trade Returns as "Artificial Silk Yarn, i.e. Yarn, Thread, Straw, either wholly of Artificial Silk or of Artificial Silk mixed with other materials."

(b) Described in the Trade Returns as "Tissues wholly of Artificial Silk or of Artificial Silk mixed with other materials." See text, page 291.

* Owing chiefly to difficulties of classification no reliable comparative figures are obtainable as to exports of artificial silk manufactures (piece goods, etc.) from foreign countries.

No corresponding pre-war figures are available, but on the average of the four years 1910-13 the recorded trade in artificial silk yarns and manufactures (other than apparel) included total imports and re-exports of about £18,000 and £11,000 respectively, and exports of British products of about £252,000. These figures indicate that the trade carried on at that period was of small dimensions.

In order to indicate the relation between the imports (and the exports) of the different classes of artificial silk products it has been necessary to prepare the above table on a value basis, because, prior to the imposition of the import duty on 1st July, 1925, particulars of the weight of piece goods and other manufactures were not recorded. The table is incomplete in that it does not include some manufactures of artificial silk mixed with natural silk or with wool ; nor does it comprise apparel and embroidery. Piece goods of artificial silk and cotton are, however, included both after the date of imposition of the duty, and also (unless they were specifically declared as cotton goods by importers) before that date.

So far as imports are concerned, it will be seen that since the imposition of the customs duty there has been a very great reduction in the imports of yarn, threads and filaments. The figures also indicate a considerable reduction in the imports of manufactures other than piece goods and a large increase in imports of piece goods. This may be due in some small measure to change in classification, since the substitution of the heading "Tissues" for "Piece goods," after 1st July, 1925, may have resulted in the transfer of certain goods from "Other manufactures" to the heading "Piece goods." Re-exports are not large in proportion to the total imports of artificial silk goods.

The principal items in both the import and export trade are (1) yarns, threads and filaments and (2) piece goods ; and these are considered below in some detail. As regards the other headings the main source of imports of *artificial silk waste* was Switzerland, and *manufactures other than piece goods* were mainly consigned from Germany, France, Belgium and Switzerland. Exports of waste from the United Kingdom were mainly consigned to the United States, while the British Empire, and especially Australia, afforded the best market for manufactures other than piece goods.

The following tables show the geographical distribution of British overseas trade in artificial silk yarn, threads and filaments (on a weight basis) and in piece goods (on a value basis).

Geographical distribution of imports into and exports from the United Kingdom (thousands of lb.).

					1925.		
Artificial Silk Yarn, Threads and Fila- ments.*	1921.	1922.	1923.	1924.	Jan. to June.	July to Dec.	1926.
<i>Imports from—</i>							
Germany	4	78	92	443	1,433	39	100
Netherlands ..	85	326	515	1,337	1,361	204	958
Belgium	373	636	549	304	483	81	149
Switzerland ..	500	1,087	2,103	2,666	2,104	64	224
Italy	15	247	2,461	4,451	5,121	54	745
Other Countries ..	303	268	133	1,079	818	19	125
Imports : Total ..	1,280	2,642	5,853	10,280	11,320	461	2,301
Re-exported	51	87	138	129	49	107	501
Imports retained ..	1,229	2,555	5,715	10,151	11,271	354	1,800
<i>Exports to—</i>							
Sweden	9	12	40	163	166	113	281
Denmark	3	10	14	86	90	83	243
Germany	(a)	2	11	125	61	90	71
Switzerland ..	19	64	104	684	170	13	59
Spain	4	16	2	82	261	294	585
China	11	64	327	218	164	203	103
Japan	50	77	295	358	128	212	787
United States ..	1,024	600	1,896	383	151	429	203
Brazil	5	56	111	276	272	146	311
Argentina	16	28	30	180	185	120	235
British India ..	25	130	226	603	470	353	514
Australia	202	781	606	1,210	751	526	1,397
Canada	190	394	791	1,133	860	257	201
Other Countries ..	57	179	298	850	365	270	849
Exports : Total ..	1,615	2,413	4,751	6,351	4,094	3,109	5,839

* See note (a) on page 290 as regards description since July, 1925.

(a) Less than 500 lb.

Geographical distribution of imports into and exports from the United Kingdom (£'000).

Artificial Silk Piece Goods.*	1921.	1922.	1923.	1924.	1925.		1926.
					Jan. to June.	July to Dec.	
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
<i>Imports.</i>							
Wholly of artificial silk.	}	Details not available.				311	1,070
Of artificial silk mixed with other materials†						721	2,521
Total	451	1,291	1,754	1,635	1,845	1,032	3,591
<i>From—</i>							
Germany	223	695	1,256	899	890	269	1,217
France	118	145	56	97	411	337	892
Switzerland ..	66	336	287	301	240	274	943
Italy	5	35	64	81	80	52	198
Austria	1	18	55	133	140	28	63
Other Countries ..	38	62	36	124	84	72	278
Imports: Total ..	451	1,291	1,754	1,635	1,845	1,032	3,591
Re-exported	13	56	117	348	256	158	319
Imports retained ..	438	1,235	1,637	1,287	1,589	874	3,272
<i>Exports.</i>							
Wholly of artificial silk.	}	Details not available				146	331
Of artificial silk mixed with other materials††						1,113	4,687
Total	767	892	1,110	1,767	1,565	1,259	5,018

* Prior to July, 1925, described as "Piece goods (including plushes)." From July, 1925, onwards described as "Tissues."

† Not comprehensive, *see* page 291.

† The materials used for mixing are mainly cotton and wool. *See* table on p. 295.

Artificial Silk Piece Goods.*	1921.	1922.	1923.	1924.	1925.		1926.
					Jan. to June.	July to Dec.	
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
<i>Exports—contd.</i>							
<i>To—</i>							
Egypt	44	50	25	52	57	79	164
Dutch East Indies	6	18	5	4	17	22	187
China	41	20	33	100	89	37	255
Colombia	4	5	11	12	17	18	146
Venezuela	5	5	14	8	14	17	102
Brazil	99	66	52	29	37	50	164
Argentina	38	22	24	22	30	16	71
Union of South Africa	12	18	24	47	43	51	191
British West Africa	10	8	18	28	33	42	129
British India ..	100	40	220	349	143	122	969
Straits Settlements and Malay States	2	3	9	19	22	39	201
Australia	116	296	216	311	332	186	594
New Zealand	9	35	52	67	90	51	116
Canada	18	64	106	166	187	129	548
Other Countries ..	263	242	301	553	454	400	1,181
Exports : Total ..	767	892	1,110	1,767	1,565	1,259	5,018

* Prior to July, 1925, described as "Piece goods (including plushes)." From July, 1925, onwards described as "Tissues."

It will be noted that in the latter half of 1925 and in 1926 exports of tissues made wholly of artificial silk formed only a small proportion of the total exports of tissues shown in the table, and as the table does not include all "mixed" tissues, it is evident that the latter form the great bulk of the exports of artificial silk tissues from this country.

Particulars are available from the beginning of 1926 as to the exports of home manufactures of piece goods composed of (a) artificial silk and cotton and (b) artificial silk and wool, as shown on next page. With the exception of such mixed artificial silk and wool piece goods as are known as "Woollens" or "Worsteds," these commodities are included in the figures of "Artificial Silk Piece Goods" given in the preceding table.

Piece goods of	Year.	Quantity.		Value. £
		sq. yd.	lb.	
		Thousands	Thousands	Thousands
Artificial silk and cotton	{ 1926	60,416	9,358	4,228
	{ 1927	72,431	11,275	4,598
Artificial silk and wool ..	{ 1926	1,581	554	303
	{ 1927	2,068	830	350

These figures are comprehensive so far as the materials mentioned are concerned.

Foreign Tariffs on Artificial Silk Goods.—In all countries import duties are levied on artificial silk goods and goods in which artificial silk is used. Where the duties are on a specific basis, rates have been fixed in many cases which bear heavily on trade. To a large extent this is due to the fact that in the countries in question no distinction is drawn between artificial silk and real silk goods, so that the former, paying the same specific duties as the latter, are subject to a much greater *ad valorem* tax. (This discrimination obviously does not arise when the tariff is on an *ad valorem* basis).

Among the countries where no distinction is made in the tariffs between real silk and artificial silk goods are Argentina, Austria, Brazil, Greece, Italy, Japan, Spain, Switzerland, and Turkey; and though in the case of some other countries (e.g. Czechoslovakia, France, Germany, Italy and Sweden) lower duties are leviable on goods composed wholly or partly of artificial silk (or certain descriptions of these) it appears that the *ad valorem* incidence of the tax is generally higher in the case of goods made of or with artificial silk than in the case of real silk, since the differential of duty does not seem to be as great as the differential of price. A number of the tariff modifications in favour of artificial silk which have already been effected have arisen out of commercial treaties made between countries which export artificial silk goods and other countries, and the benefits of these are applicable to British goods in virtue of the most-favoured nation treatment to which these are entitled. Moreover it is the regular practice of the Board of Trade whenever foreign tariff revisions are under discussion to endeavour to secure the necessary discrimination in specific duties as between goods made of or with artificial silk and those made of or with real silk, with particular reference to the case of piece goods of cotton and artificial silk.

While the imposition of high duties on artificial silk goods is mainly due to the cause mentioned above, namely, the failure to distinguish between artificial silk and real silk in specific tariffs, it may be

mentioned that when high duties are imposed on "luxury" goods imported into a country, there is a tendency to include artificial silk goods (probably on account of their supposed analogy with real silk goods) in the list of luxuries. This is the case, for instance, in Japan, where the special 100 per cent. *ad valorem* duty is levied on both real and artificial silk goods, and where, moreover, under the normal specific tariff no distinction is made between the two categories.

Organisation.

The industry is one in the commercial development of which research and experiment and the gradual perfection of processes with experience have played an important part; and the existing firms who were earliest engaged in the industry found it necessary to spend much money and time before their product reached the stage when its market could be regarded as assured. Such firms have thus considerable advantages over the producers who have later entered the field, and as they are mainly now working on a very large scale, they have in addition all the advantages arising from this circumstance. The necessity of finding markets for increased production and the imposition of customs duties in many countries have been among the factors which have favoured a movement towards the international syndication of the industry and the extension of the manufacturing activities of large enterprises into other countries. The outstanding tendency, in fact, of the post-war period has been the rapid growth of international arrangements which are extremely intricate and far-reaching, and in this movement British interests have taken a leading part.

In Great Britain, Germany, Italy and the United States (to name only the principal producers) a large part of the domestic production of artificial silk is now in the hands of very large firms, who also control or are associated with producing firms in other countries. In Great Britain the first place is taken by Messrs. Courtaulds, Limited, who, with their controlled concerns abroad, are also the largest producers in the world. The capital of the company is £20 million (compared with £2 million in 1914), or nearly two-thirds of the total capital of all companies manufacturing artificial silk in Great Britain as estimated early in 1927. At the same date Messrs. Courtaulds' output was estimated to be 80 per cent. of the total output of the country. The activities of the company include the production not only of artificial silk but also of manufactured goods (tissues, etc.) made from the material. In Germany the leading company is the Vereinigte Glanzstoff Fabriken A.G. of Elberfeld, which is responsible for over half of the total output of Germany. In Italy the principal place is held by the Societa Nazionale Industria Applicazioni Viscosa ("Snia Viscosa") of Turin, with a capital of 1,000 million lire, or over half the estimated total capital of all Italian artificial silk companies. Early in 1927 these three great

undertakings entered into an arrangement* which included an interchange of shares and was stated to aim at the elimination of wasteful competition and the promotion of co-operation by means, for example, of the mutual communication of technical improvements and inventions. Having regard to the previously existing connections between the three participants in this arrangement with large producers outside their own countries, it is clear that the linking of the companies represents a very important step towards the world-wide inter-connection of the artificial silk industry. The output of the whole group thus formed is stated to be over 70 per cent. of the world's production of artificial silk. Apart from the arrangement just mentioned, Messrs. Courtaulds' ramifications are stated to extend to the United States (where they have a controlling interest in the American Viscose Company, which is responsible for more than half the total American production), France, Canada, Switzerland; and through the Swiss Company to Sweden. The Glanzstoff concern has international interests extending to the United States, Czechoslovakia, Austria and Holland; and it is also stated to have agreements with firms in Japan and Switzerland. Moreover, it is associated with the other German viscose producers in a combine which was formed in 1926 to standardise and classify viscose silk and to fix uniform prices and terms of delivery. Snia Viscosa has interests in producing concerns in the United States, Poland, Roumania and possibly other countries.

* An arrangement for co-operation between Messrs. Courtaulds and the Glanzstoff concern had already been made in 1925.

ARTIFICIAL SILK.

APPENDIX I.

International Trade in Artificial Silk.

The following Table shows total imports and exports of artificial silk for the principal producing countries :—
Imports and exports of artificial silk yarn, threads and filaments.
(Metric tons of 2,240 lb.).

	United States.		Italy.		Great Britain.		Germany.		France.		Belgium.		Netherlands.		Switzerland.	
	Im- ports.	Ex- ports.	Im- ports.	Ex- ports.	Im- ports.*	Ex- ports.	Im- ports.	Ex- ports.	Im- ports.	Ex- ports.	Im- ports.	Ex- ports.	Im- ports.	Ex- ports.	Im- ports.	Ex- ports.
1913 ..	1,045.3	(a)	357.3	152.7	(a)	(a)	1,563.3	797.1	3.0	497.2	(a)	(a)	(a)	(a)	265.4	396.5
1923 ..	1,771.4	(a)	508.5	2,326.0	2,591.8	2,154.6	267.9	1,575.6	775.1	220.2	(a)	(a)	68.3	1,753.7	1,003.8	676.2
1924 ..	776.4	(a)	607.4	4,582.8	4,603.7	2,880.2	1,086.3	2,347.9	1,781.8	138.0	(a)	(a)	152.6	2,555.3	1,454.2	1,057.5
1925 ..	3,174.8	67.1	583.2	7,259.9	5,271.6	3,266.4	2,040.6	3,797.0	877.7	636.2	151.3	3,343.6	286.3	3,041.9	1,245.8	1,871.3
1926 ..	4,609.1	181.6	765.4	9,791.1	816.3	2,648.0	4,539.9	3,661.4	985.3	1,089.4	513.0	3,244.5	497.4	5,543.5	1,010.4	2,954.3

(a) Particulars not available.

* Net Imports (i.e. imports less re-exports of imported goods).

The following table shows the principal destinations of exports of artificial silk from the principal foreign exporting countries.

Artificial silk yarns threads and filaments.

	1923.	1924.	1925.	1926.
	M. Tons.	M. Tons.	M. Tons.	M. Tons.
<i>Italy—</i>				
<i>Total Exports</i>	<i>2,326.0</i>	<i>4,582.8</i>	<i>7,259.9</i>	<i>9,791.1</i>
of which to—				
Germany	122.4	196.1	724.7	2,474.8
Great Britain (a) ..	833.4	1,600.6	2,019.2	387.1
Spain.. ..	37.0	195.3	265.1	451.7
Switzerland	588.6	377.4	350.1	297.1
China.. ..	113.7	223.3	432.7	1,180.9
Japan	26.4	50.0	178.5	703.5
British India and Cey- lon.	30.4	120.3	461.9	1,299.6
U.S.A.	233.1	107.0	1,483.9	970.3
Argentina	0.5	36.2	172.7	128.7
<i>Germany—</i>				
<i>Total Exports</i>	<i>1,575.6</i>	<i>2,347.9</i>	<i>3,797.0</i>	<i>3,661.4</i>
of which to—				
Great Britain	54.9	250.4	799.0	64.6
Switzerland	865.5	1,247.9	845.0	587.2
Czechoslovakia	123.1	169.4	309.1	477.6
China.. ..	0.8	5.6	283.8	230.8
U.S.A.	290.8	400.3	941.4	1,139.1
Austria	34.1	51.0	124.5	213.6
Argentina	3.8	11.3	75.0	110.9
Canada	14.6	21.2	33.9	114.1
<i>Netherlands—</i>				
<i>Total Exports</i>	<i>1,754</i>	<i>2,555</i>	<i>3,041.9</i>	<i>5,543.5</i>
of which to—				
France	37	304	88.3	57.1
Germany	12	86	90.2	840.7
Great Britain	374	828	853.5	558.4
U.S.A.	551	289	650.6*	1,699.3 *
Spain.. ..	250	247	281.3*	390.3 *
Canada	22	58	145.2*	408.5 *
China.. ..	158	148	249.3*	361.2 *
British India	20	8	71.7	218.4 *
Switzerland	194	340	275.9	190.3

(a) Including Ireland in the year, 1923.

* Incomplete.

*Artificial silk yarn, threads and filaments.*Exports from principal producing countries (*continued*).

	1923.	1924.	1925.	1926.
	M. Tons.	M. Tons.	M. Tons.	M. Tons.
<i>Switzerland—</i>				
<i>Total Exports</i>	676.2	1,057.5	1,871.3	2,954.3
of which to—				
Germany	64.5	209.7	249.9	411.9
Great Britain	162.5	186.7	303.0	52.6
Spain	123.9	173.0	375.1	548.3
U.S.A.	73.8	65.1	253.2	413.2
Czechoslovakia	23.3	67.1	100.6	136.9
Italy	27.6	44.7	87.1	264.0
Argentina	8.1	29.6	113.1	149.8
<i>Belgium—</i>				
<i>Total Exports</i>			3,343.6	3,244.5
of which to—				
Germany	(c)	(c)	738.1	784.0
France			528.7	626.2
Great Britain			408.9	96.0
Argentina			47.9	28.4
Italy			348.1	326.1
U.S.A.			334.2	383.5
Austria			99.8	152.6
Switzerland			257.0	149.2

(c) Particulars not available.

Italy's chief markets in 1926 were Germany, British India and Ceylon, China, Japan, and the United States of America. The principal markets of the Netherlands were Germany, United States of America, and Great Britain; those of Belgium were Germany, France, the United States of America, and Italy; and those of Switzerland were Germany, Spain, and the United States of America. The exports of artificial silk from Great Britain are analysed according to destinations in the Table on p. 292, and it will be seen that the principal destinations in 1926 were Australia, British India, Canada, Japan and Spain.

Some information is given in the following paragraphs about the imports during the last three or four years of artificial silk yarns, threads, filaments, etc., with their principal sources, into the various countries which together form the market for the great bulk of the artificial silk yarn exported from this country. In the study of the figures given, the intricate and far-reaching international arrangements between the producing firms (*see* pp. 296-7) will no doubt be borne in mind. The Tables bring out what is to be noticed in the Table given above on p. 298, a general decline in 1926 in the exports from this country. Where there has been no decline the rate of increase is low compared with that of other countries.

Canada.—The following figures show a marked decline in the imports into Canada from this country and a gain in the imports from the United States, Germany, and other countries lumped together. The share of the United Kingdom fell from 74·7 per cent. in 1925 to 11·8 per cent. in 1927.

	1925.	1926.	1927.
	Thousand lb.	Thousand lb.	Thousand lb.
United Kingdom	1,321·7	947·1	232·9
United States	208·7	142·7	557·6
Germany	50·8	211·0	207·5
Other Countries	189·6	657·7	1,061·2*
Total Imports	1,770·8	1,958·5	2,059·2

* Including an import of 779,020 lb. from the Netherlands.

Australia.—Very few figures of imports of artificial silk yarn into Australia are available, but of a total import valued at £349,089 in the year ended June, 1926, the imports from the United Kingdom were valued at £339,019, the imports from other countries being, therefore, practically negligible.

British India.—The most remarkable feature of the following Table is the striking increase during the period 1923–24 to 1926–27 in the imports from Italy; but it will be noticed that the imports from Germany and the Netherlands have also risen at a much greater rate than those from this country, though the latter, in spite of a slight drop in 1926–27 as compared with 1925–26, still took second place in the list.

	1923–24.	1924–25.	1925–26.	1926–27.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
Total Imports	406·0	1,171·0	2,671·0	5,776·1 ✓
of which from:—				
United Kingdom	247·4	703·0	781·0	654·6
Italy	76·9	392·7	1,309·3	3,843·2
Germany	9·5	6·7	157·4	232·1
Netherlands	19·5	36·7	129·8	358·3

Argentina.—The following figures of imports into the Argentine Republic indicate an advancing trade, in which Italy had secured, in 1925 and 1926, the leading place:—

	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.
Total Imports	349	1,289	1,631
of which from:—			
United Kingdom	123	362	261
Italy	59	390	365
Germany	23	171	252
Netherlands	43	144	191
Belgium	44	100	128
Switzerland	17	73	284

The figures of exports in the years 1923-6 from the United Kingdom and Italy to Argentina are as follows :—

	1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
United Kingdom ..	30	180	302	220
Italy	1	80	381	284

Brasil.—The following figures of exports to Brazil from the United Kingdom and from Italy show a different situation :—

	1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
United Kingdom	110	276	408	293
Italy	35	60	152	84

Japan.—The following figures for Japan show that a number of countries are making rapid advances, and that in 1926 the United Kingdom lost its lead to Italy :—

	(a) 1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
Total Imports ..	1,009	898	826	3,295
of which from :—				
United Kingdom ..	89	455	371	720
Italy	81	152	135	1,022
Germany	128	136	101	384
Switzerland ..	98	49	80	381
France	101	59	83	346
Netherlands ..	57	13	24	346

(a) Figures for this year are incomplete owing to the Great Earthquake.

China.—No very satisfactory figures for China are available, but such figures as there are indicate an increasing total import in the years 1923-6, and advances on the part of several countries—very striking in the case of Italy and Germany—and a fall in the imports from the United Kingdom.

United States.—The following figures indicate a gain in 1926 as compared with 1923 on the part of all the countries shown except the United Kingdom.

	1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
Total Imports ..	6,878	7,129	12,530	14,691
of which from:—				
United Kingdom ..	2,078	1,487	1,175	337
Italy	990	1,448	3,803	4,240
Switzerland ..	1,218	1,646	1,848	1,699
Germany	1,092	1,268	2,890	3,326
Belgium	420	361	691	811
Netherlands ..	832	743	1,114	2,700
France*	103	13	298	713

* Excluding waste and yarns made therefrom.

Spain.—The figures of imports into Spain shows a progressive trade on the part of all the countries concerned, except Belgium. The imports from the United Kingdom fell slightly in 1926 as compared with 1925, but are much in advance of the imports from the United Kingdom in 1924.

	1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
Total Imports ..	1,424	1,729	2,655	3,936
of which from:—				
United Kingdom ..		91	578	513
Italy	Particulars	389	570	1,030
Switzerland ..		428	739	1,151
Netherlands ..	not	386	452	709
Germany		80	71	109
Belgium	available.	292	135	267
France		56	87	105

Germany.—The figures of imports into Germany, which relate to dyed yarn, show an advancing total trade with a decline in the imports from this country since 1924, and a remarkable increase, in 1926, in the imports from Italy.

	1923.	1924.	1925.	1926.
	Thousand lb.	Thousand lb.	Thousand lb.	Thousand lb.
Not twisted and single twist.				
Dyed—				
Total Imports ..	573	2,350	4,438	9,938
of which from:—				
Great Britain ..	11	327	258	55
Belgium	299	655	1,646	1,796
Italy	42	300	1,071	4,455
Switzerland ..	138	681	799	1,317
Netherlands ..	24	90	174	1,448
France	—	9	33	78

APPENDIX II.

Miscellaneous Statistics.

TABLE 1.

Price of artificial silk yarn and other yarns.

The following table, abstracted from an article by Mr. S. Courtauld in the Artificial Silk Number of the "Times Trade and Engineering Supplement" (2nd April, 1927) shows the prices paid during certain years by a large firm of mixed goods weavers for the yarns specified in the first column.

	1913.	1919.	February 1920.	October 1920.	1926.	1927.
First quality Viscose silk, 150 denier.	5/3	16/-	19/3	12/6	6/0*	5/0*
Canton silk, dis- charged.†	17/4	59/8	104/0	46/8	31/4*	23/0*
Italian silk, dis- charged.†	21/4	73/8	126/11	59/4	40/8*	36/0*
Egyptian mercer- ised cotton 2/70s‡	2/1	7/10	17/5	7/4	4/2	3/5½
Botany worsted, 1/50s.§	3/6	17/6	20/0	12/0	6/9	6/7

* Silk and artificial silk duties not included.

† In real silk very little exists heavier than 30 denier ; the most common sizes are quoted.

‡ 2/70s. cotton = 151 denier, silk count.

§ 1/50s. worsted = 159 denier, silk count

TABLE 2.

Estimated world production and consumption of artificial silk.

A.—Statistics abstracted from a Memorandum prepared in October, 1926, by the Associazione Nazionale Italiana Seta Artificiale for the League of Nations International Economic Conference, 1927. They differ somewhat from estimates derived from other sources, as will be seen by reference to the production figures for 1925, as given in table (B) overleaf, which also shows estimated production and consumption in 1926.

	Production.						Consumption.			
	1913.		1922.		1923.		1924.		1925.	
	Metric Tons.	Per-centage of Total.	Metric Tons.	Per-centage of Total.	Metric Tons.	Per-centage of Total.	Metric Tons.	Per-centage of Total.	Metric Tons.	Per-centage of Total.
United States	700	6	11,000	31	16,000	34	17,000	27	26,600	31
Italy	150	1	3,000	8	5,000	11	8,000	13	7,350	9
Great Britain	3,000	27	7,000	20	8,000	17	11,000	17	14,000	16
Germany	3,500	32	5,000	14	6,500	14	10,500	16	10,250	12
France	1,500	14	3,000	8	3,500	7	6,000	9	8,250	10
Belgium	1,300	12	3,000	8	3,500	7	4,000	6	1,800	2
Netherlands..	—	—	1,000	3	1,250	2	2,000	3	1,250	1
Switzerland	150	1	750	2	1,500	3	2,000	3	1,900	2
Other Countries	700	7	1,750	6	2,250	5	3,500	6	14,100	17
Total	11,000	100	35,500	100	47,500	100	64,000	100	85,500	100

Note.—The statistics of consumption represent yarn and like material consumed directly by the population and also that used by industry, but they do not take into account the amount of artificial silk contained in piece goods and other manufactures which are imported into and exported from the countries concerned.

B.—Particulars abstracted from the Artificial Silk Number of the "Times Trade Supplement" 2nd April, 1927, with the insertion of some additional information as regards consumption in 1928.

		Output.				Consumption.	
		1925.		1926.		1926.	
		Metric tons.	Per-centage of Total.	Metric tons.	Per-centage of Total.	Metric tons.	Per-centage of Total.
United States ..	23,000	27	29,000	29	33,000	33	
Great Britain ..	12,500	15	11,500	11	10,000	10	
Germany ..	12,000	14	12,000†	12	12,500	13	
Italy ..	12,500	15	16,000	16	7,500	8	
France ..	7,000	8	8,000	8	8,000	8	
Belgium ..	6,000	7	6,000†	6	3,000	3	
Netherlands ..	4,000	5	6,500	7	2,000	2	
Switzerland ..	2,500	3	3,500	4	2,000	2	
Japan ..	1,000	1	3,000	3	4,500	4	
Other Countries ..	4,000*	5	4,500*	4	17,500	17	
Total ..	84,500	100	100,000	100	100,000	100	

* Under this heading are included Austria, Czechoslovakia, Poland Hungary, Spain, Sweden, Russia and Canada.

† Estimated.

TABLE 3.

Percentage of artificial silk used in different industries in the United States.

(These particulars are abstracted from the artificial silk number of "The Manchester Guardian Commercial" 15th April, 1926, with the addition of particulars for 1928.)

	1912.	1913.	1915.	1921.	1923.	1924.	1925.	1926.
Hosiery ..	30	40	65	23	22	23	28	25
Cotton goods ..	10	12	15	9	11	15	26	21
Silk goods ..	10	10	5	12	15	18	16	14
Underwear ..	—	—	—	2	5	11	13	24
Knitted articles ..	7	5	5	29	25	14	5	3
Braids ..	10	5	2	10	10	8	4	1
Woollen goods ..	3	3	2	1	1	1	1	1
Miscellaneous ..	30*	25*	6	14	11	10	7	11
Total ..	100	100	100	100	100	100	100	100

* Including 15% used in "Plush."

Textile Industries.

Numbers insured and numbers and percentages unemployed, 1923-7.

Estimated number of persons insured under the Unemployment Insurance Acts at	Cotton Industry.	Woolen and Worsted Industry.	Silk including Artificial Silk.	Hosiery.	Carpet and Manufacture.	Textile Bleaching, Printing, Dyeing, etc.
July 1923 ..	567,440	268,230	37,300	89,200	25,330	105,500
July 1924 ..	572,270	260,480	41,490	93,200	27,120	110,970
July 1925 ..	573,150	254,890	46,550	96,790	26,040	108,060
July 1926 ..	574,980	252,330	50,820	96,650	25,960	108,920
July 1927 ..	569,950	247,970	55,040	100,650	24,780	111,690

Numbers unemployed among insured workpeople at end of	Numbers.	Numbers.	Numbers.	Numbers.	Numbers.	Numbers.
June 1923 ..	122,186	18,488	2,412	6,036	881	11,586
December 1923 ..	69,001	26,982	3,659	7,585	1,021	13,939
June 1924 ..	87,316	15,745	1,636	4,361	1,664	13,971
December 1924 ..	39,364	23,631	2,987	8,298	1,915	12,827
June 1925 ..	48,802	50,959	2,956	8,457	2,842	12,570
December 1925 ..	38,632	22,514	5,050	4,567	1,794	12,021
June 1926 ..	143,991	63,933	5,565	14,312	5,954	23,376
December 1926 ..	76,554	27,891	5,310	7,836	1,865	19,756
June 1927 ..	40,390	23,952	3,268	6,392	1,629	12,598
December 1927 ..	56,992	17,034	3,322	3,889	904	12,792

Percentages unemployed among insured workpeople at end of	Percentage	Percentage.	Percentage	Percentage.	Percentage.	Percentage.
June 1923 ..	21.5	6.9	6.5	6.8	3.5	11.0
December 1923 ..	12.2	10.1	9.8	8.5	4.0	13.2
June 1924 ..	15.4	5.9	4.4	4.9	6.6	13.2
December 1924 ..	6.9	9.1	7.2	8.9	7.1	11.6
June 1925 ..	8.5	19.6	7.1	9.1	10.5	11.3
December 1925 ..	6.7	8.8	10.8	4.7	6.9	11.1
June 1926 ..	25.1	25.1	12.0	14.8	22.9	21.6
December 1926 ..	13.3	11.1	10.4	8.1	7.2	18.1
June 1927 ..	7.0	9.5	6.4	6.6	6.3	11.6
December 1927 ..	10.0	6.9	6.0	3.9	3.6	11.5

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Age Group	Number of Respondents
18-24	1
25-34	2
35-44	1
45-54	2

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Figure 1: A schematic diagram of a 1D lattice chain. It shows a horizontal line with several vertical bars representing lattice sites. The sites are connected by horizontal lines, indicating nearest-neighbor interactions. The diagram is labeled 'Figure 1' and includes a caption below it.



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